

TCS2: Return on CO₂

Breaking out of Classical Investment Pattern

Proposal Sheet

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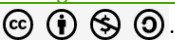


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1 GENERAL INFORMATION

Activity Sector	Manufacturing		
Key words	CSRD, Environmental Sustainability, CO2 footprint, Product Management		
Author(s) / Institution / Country	 Wilfried Manhart, FH Vorarlberg (Austria)  Adam Rovensky, FH Vorarlberg (Austria)		
Public	Initial and alternative education ☒ Beginners ☒ Intermediaries ☐ Experts	Continuing education ☒ Beginners ☒ Intermediaries ☐ Experts	
Domain(s)	☒ CSR ☐ Economics ☐ Entrepreneurship ☐ Finance ☐ HRM ☐ Information Systems ☐ Law ☒ Marketing & sales ☐ Political Sciences ☒ Strategy ☒ Supply chain & logistics	☐ Arts, Architecture, Design, Ergonomics ☐ Education Sciences ☐ Geography & Urban planning ☐ Information & communication Sciences ☐ Literature & language Sciences ☐ Medical Sciences ☐ Physical activities & Sport Sciences ☐ Psychology, Sociology, Philosophy, Demography	☐ Biology & Neurosciences ☐ Chemistry, Biochemistry ☐ Earth & Universe Sciences ☐ Electrical, Electronics ☐ Energetics ☐ Mathematics & Computer Science ☐ Mechanical Engineering ☐ Physics ☐ Processes
UN SDG	☒ SDG 9 Build resilient and sustainable industry ☒ SDG 12 Sustainable Consumption and Production Patterns		
Place in the Circular Economy Model	☒ Raw materials ☐ Distribution ☐ Collection	☒ Sustainable design ☐ Consumption Reuse Repair ☐ Waste management	☒ Production ☐ Residual waste 

2 ABSTRACT

2.1 The Case Purpose

This Teaching Case Study (TCS) aims to give students knowledge and skills about how to include environmental sustainability in corporate decision making. The case focuses on adoption of energy- and CO₂-reducing innovations through industrial components in complex value chain structures by addressing corporate selling and purchasing decision making.

2.2 Introduction to the Case

Many innovations addressing the effective reduction of resource-use to contribute to more sustainable production are not implemented in time due to decision making processes that prevail in manufacturing companies.

The case looks at this phenomenon from the point of a small industrial component supplier embedded in a complex value chain selling to the PET bottling industry. By trying to find ways to increase adoption of the innovative product in an industry that uses its equipment with lifecycles of 15 years and more, value chain participants must address not only new equipment sales but also seize the opportunities in the after-market arena. Although manufacturing companies are moving to lifecycle costing and new business models, offering upgrading services remains a tough challenge for most. While basic selling aspects based on energy reduction and thus CO₂ savings are included, the case opens new views on how to evaluate investments with potential advantages in cost as well as environmental resource usage.

2.3 Why use Teaching Case Studies

Case studies are a didactic format that allows students to learn in a real-life situation without being exposed to the risks of failure in such situations. Therefore, case studies offer a highly memorable and rich experience of problems that they might face in their professional lives and allow them to come up with innovative ideas for solutions.

To gain the most from a TCS as a student, it is important that the student accept the approach and most importantly the situation described in the case. This means that the student should act as close to a real-life situation as possible, taking into consideration any natural or formal boundaries or limitations – the student will also experience boundaries or limitations in future work in a company. It also means that the student should try to bring any prior knowledge relevant to the case into play, as the student would in a real-life situation in a company. E.g., if the student is asked to give a presentation, include any prior knowledge about how to do presentations although it is not formally emphasised in the case.

3 PEDAGOGIC GOALS & PREREQUISITES

3.1 Overall Learning Objectives

This case study challenges students with a marketing and sales problem for an innovative product focused on reducing operating resources, particularly energy and CO₂.

Students will:

- Understand the importance of value chain knowledge in industrial marketing.
- Extract and apply relevant information.
- Define and develop approaches under given constraints.
- Compare, evaluate, and prioritize strategic options.

Through deeper insight into value chain dynamics, students will better grasp the environmental impact of everyday products. The case also reinforces the use of strategic marketing and environmental analysis methods.

3.2 Specific Learning Objectives

Students will address various marketing tasks while integrating environmental considerations.

They will:

- Describe and estimate market opportunities in the aftermarket sector.
- Evaluate value propositions against alternative environmental solutions.
- Develop and compare options for similar environmental impacts.
- Design compelling value propositions for targeted customer segments.
- Propose aftermarket strategies to enhance adoption.

3.3 Target Audience

The target audience are business students from years 1-3 of studies. Hence, the students need a basic understanding of business plans, investment analysis and manufacturing processes as well as marketing and sales principles. However, the selected product, a small, but mission-critical industrial component of large and highly automated production equipment, is chosen to make TCS approachable for as many students as possible. In addition, it wants to highlight Aftermarket business as a key playground for companies to start engaging in when pursuing goals of more sustainability of existing productive assets.

3.4 Students Prerequisites

For the students to succeed in working with and solving the TCS, they must have prior knowledge and skills. Hence, the TCS must be supported by relevant teaching courses about environmental sustainability and the concepts of CO2 footprint measuring as well as Circular Economy. Additionally, technical aptitude to understand manufacturing processes and associated economic consequences is desirable.

More specifically, students should be familiar with the following concepts:

- Defining and estimating the size of a market from industry information.
- Applying comparative investment analysis.
- CO2 footprint accounting and interpretation
- Building and interpreting scenarios

4 SUSTAINABILITY GOALS

This Teaching Case Study (TCS) focuses on the topic of transformation, that seems to be very common in pursuing environmental sustainability goals.

It highlights the complexity of current industrial structures and pinpoints to mechanisms in international value chains and corporate behaviour that makes it difficult to adopt innovative alternatives not only for new products but to see the necessity to upgrade existing stocks of productive equipment with much better environmental performance. As such, the case addresses the SDGs 9 and 12.

Addressing the potentials to lower CO₂e emissions in production for consumer goods on a large market base justifies focus on a profane topic: dramatically increasing the energy efficiency of production processes without massive investments that can immediately be implemented. Companies developing these solutions will have to be creative in promoting them to overcome structural barriers and decision patterns to create real impact.

For circularity, the emphasis is on implementing R-strategies¹, drawing from the principles of the Circular Economy (CE) concept combined with resource saving technologies.

5 CASE DESCRIPTION

Year of the problematic	2025		
Duration for students	Preparation: 2-4 hours Implementation: 4-8 hours		
Languages	☒ English	☐ Other:	
Use case	☒ In class	☐ Examination TCS	
Category	☐ C1: Case written in collaboration with a company which has given its consent for using of its internal sources such as the company name, figures, photos, videos, and so on. Join the agreement sheet. ☐ C2: Case based on real company information and with the acceptance of the company to use its data, but names or figures (of company and persons) are modified to keep them confidential. Join the agreement sheet. ☐ C3: Case written using external public sources (annual report, websites, brochures, newspapers, ...) where names or verbatims of the protagonists are used. Join the agreement sheet. ☒ C4: Case based on real company using public information without the agreement of the company (generally, the names (company and persons) are changed to anonymous ones. Impossibility to make the link between the TCS and the company. ☐ C5: Imaginary case based on teacher's experience who collected information from several companies to write a case study with a fictive integrative company. It can also be a compilation of different situations of several periods put together at the same time to form a pedagogic tool.		
Number of pages: Statement / Annex	10 / 7		
Number of pages: Teachers' note:	11		
Diffusion licence	See cover page		

6 Case Pack components

6.1 General documentation

Table 6.1: General TCS documents

Document name	Description	File name	# pages
Proposal Sheet	Teaching Case Study description. This file can be published to inform potentially interested persons about the Teaching Case Study (this file)	SCABEE TCS Return on CO2 (2025) – Proposal Sheet.docx	6

6.2 Student's documentation

Table 6.2: Documents for students (to be shared when TCS applied)

Document name	Description	File name	# pages
Case scenario	The document for students including the mission and all necessary information.	SCABEE TCS Return on CO2 (2025) – Base Scenario.docx	17
Excel Spreadsheet	The Excel workbook for teachers and students supporting the Teaching Case Study, including cost analysis, technical data, and CO ₂ savings calculations.	SCABEE TCS Return on CO2 (2025) – Instructor Data.xlsx	6 Tabs

6.3 Teacher's documentations

Table 6.3: Documents for teachers (not to be shared with students)

Document name	Description	File name	# pages
Teacher's note	The document for teachers to guide them through the Teaching Case Study.	SCABEE TCS Return on CO2 (2025) – Teacher Note.docx	11
Excel Spreadsheet	The Excel workbook for teachers and students supporting the Teaching Case Study, including cost analysis, technical data, and CO ₂ savings calculations.	SCABEE TCS Return on CO2 (2025) – Instructor Data.xlsx	6 Tabs