

Mapping Corporate Sustainability Approaches and Facilitating Organisational Change

An in-depth case study to reveal discrepancies between theory and practice

Key words: corporate sustainability, CSR, change management, organisational learning, change agents, systems thinking, organisations, strategy

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While recognizing the contributions of those mentioned above, the author alone bears sole responsibility for the opinions expressed in this thesis.

Abstract

Growing awareness about social and environmental externalities has prompted companies to take action to foster their corporate sustainability performance. When doing so, however, they face an **enormous amount of information** on approaches to corporate sustainability, how to strategize for it and how to implement it. These are provided by actors on all levels, from the academic sector as well as the private sector, in form of consultancies. This research aims to **connect key elements of corporate sustainability approaches to strategy implementation**, with a particular focus on **change management**, in order to increase the understanding how all these processes can be utilized to improve sustainability performance. For this a **literature review** on corporate sustainability management, organisational culture and change management, as well as corporate sustainability approaches, will serve as an integrated background on the topic. Moreover, a **methodology** will be developed that allows for a **mapping** and thus clearer characterisation of corporate sustainability approaches (**MoCSAs**). The theory streams and their **integration** are essential to **develop a systems view understanding** of what is happening at a company, when corporate sustainability approaches are implemented. The integrated theories will thus be **applied to a company**, which was studied in depth over an extensive time period, to detect the supporting conditions, challenges and ‘current state - intention gaps’ that are influencing the corporate sustainability performance and strategy development. The case analysis will show that the different streams of theory are relevant for the corporate sustainability implementation process and that their integration can contribute to the understanding of such. It thus calls for further development of integrated theories and their application to case studies that can enable **a better understanding in both the academic as well as corporate world of how corporate sustainability can and does take form.**

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List of Abbreviations

3Ps	The three Ps: People, Planet and Profit.
BSI	British Standards Institution
B2B	Business to Business
C2C	Cradle 2 Cradle
CP	Cleaner Production
CS	Corporate Sustainability
CSMS	Corporate Sustainability Management System
CSR	Corporate Social Responsibility
CSS	Corporate Sustainability Strategy/Strategies
ECSF	European Corporate Sustainability Framework
EE	Eco-Efficiency
EMAS	Eco-Management and Audit Scheme
EPA	American Environmental Protection Agency
EU	European Union
EMS	Environmental Management System
ISO	International Organisation for Standardization
KAM	Quality, Environment, Security & Health department (in Dutch originally: kwaliteit, arbeidsomstandigheden en milieu)
KPI	Key Performance Indicator
LCA	Life-Cycle Assessment
MBDC	McDonough Braungart Design Chemistry
MoCSAs	Mapping of Corporate Sustainability Approaches
MVO	Maatschappelijk verantwoord ondernemen (see CSR)
R & D	Research & Development
REACH	European Community Regulation on chemicals and their safe use: Registration, Evaluation, Authorisation and Restriction of Chemical substances
ROI	Return of Investments
SBSC	Sustainability Balanced Score Card
SME	Small or Medium-sized Enterprise
TBL	Triple Bottom Line
TNS	The Natural Step
TR	Thomas Regout
TRI	Thomas Regout International B.V.
UNEP	United Nations Environmental Programme
UNIDO	United Nations Industrial Development Organisation
VNO-NCW	Verbond van Nederlandse Ondernemingen - Nederlands Christelijk Werkgeversverbond
WBCSD	World Business Council for Sustainable Development

1. Introduction

With the growing awareness about environmental and social externalities of business activity¹ and the sustainability dialogue this has prompted, businesses all around the world currently face immense challenges and opportunities at the same time: Global competition has increased market pressures for socially and environmentally responsible business conduct (see e.g. Sun et al., 2011, p.46); energy and resource availability will decline in the future, while costs rise (see e.g. Babinet et al., 2009); more customers demand ‘green products’ (see e.g. OECD 2002a, 2002b); media attention for social and environmental company performance has risen (see e.g. Bansal, 2005), including supply chain activities (see e.g. Dube & Gawande, 2012); regulation is tightening (see e.g. López-Gamero et al., 2010) - and many companies are struggling to cope with this new reality. While these developments indeed pose great challenges, some firms are trying to use them to their advantage and a growing array of firms claim to integrate corporate social responsibility (CSR), the principle of the triple bottom line ‘people, planet, profit’ (the 3Ps), cleaner production or various other approaches to face the sustainability challenges they are exposed to (Fernández-Feijóo Souto, 2009). Companies thus increasingly aim to become ‘sustainable’, what exactly this entails, however, is still unclear.

The term sustainability goes back to the early 18th century, when the German term ‘nachhaltig’, which was later translated in ‘sustained yield’, was first used in a handbook of forestry, written by the German nobleman Hans Carl von Carlowitz (Grober, 2007). In the more recent past its usage has been coined mainly by the Brundtland report and the probably most famous and most cited part of their definition: “Development is sustainable where it meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). Sustainable development thus entails a perspective on present and future and incorporates the concept of “needs”. All of which, from a business point of view, seems rather vague and broad. It should thus not come as a surprise that companies lacking a global definition, as well as regulatory standards, tend to produce very different sustainability programmes and strategies (in the following referred to as corporate sustainability strategies (CSS)) (Cowan et al., 2010). Despite a large array of tools that is available for sustainability implementation in businesses, few organisations have succeeded in truly incorporating and institutionalizing sustainability (Hussey et al. 2001; Doppelt, 2003, Siebenhüner and Arnold, 2007 as cited in Lozano, 2012a). In fact it can easily be understood that this large array of tools is overwhelming for the strategy and environmental management of a company (Van den Brink & van der Woerd, 2004, p.187). In order to bring structure to this ‘chaos’ a literature review on corporate sustainability (CS), various approaches to CS and relevant drivers and criteria behind these approaches will serve as the theoretical base for a mapping methodology that can enable a deeper theoretical understanding about crucial differences between the approaches.

¹ The growing awareness about environmental issues started to emerge with the environmental movements in the 1960s (McCormick, 1991), which were soon followed by tightening environmental regulations in the 1970s (Dieleman, 2007). Emerging out of increasing environmental and social concerns, the publication of the Brundtland report, 1987, the subsequent publication of ‘The Limits to Growth’, which caused predictions of doom in 1972 (Hjorth & Bagheri, 2006), and finally the Rio Conference in 1992 brought sustainable development to the forefront of a global debate (Linnenlücke & Griffiths, 2010). Lastly, for instance the Brent Spar conflict of 1995 (Grolin, 1998) and the sweatshop scandals of the 1990s (Jackson, 2005), brought global attention to the topic of corporate responsibility.

However, a good understanding of CS approaches and tools does not guarantee a successful implementation and an improvement in sustainability performance (Hussey et al. 2001; Doppelt, 2003, Siebenhüner and Arnold, 2007 as cited in Lozano, 2012a). Next to the overwhelming amount of sustainability information, the lack of successful CSS implementation may have to do with the limited consideration of 'soft' issues such as values, business culture and change management (Lozano, 2012a). Within the search for the right solution, companies have often focused on technocratic measures with limited results (ibid.). In much of the literature companies have been treated as 'black boxes' (ibid.; see also Howard-Grenville, 2006; Linnenlücke & Griffiths, 2010). While more and more CSS are being developed, not much attention has been given to which role 'corporate architectures' play in impeding or enabling the shift towards sustainability (Griffiths & Petrick, 2001, p.1583). A failure to understand the dynamic complexity of the underlying organisational system and the individual people, which interact within these structures, has been connected to the linear thinking much sustainability management has been based on in the past (Hjorth & Bagheri, 2006). Research has focused on sustainability strategies and 'hard' technocratic tools, but comparably little attention has been given to the role of organisational change processes (Hoffman, 2000, Bhat, 1996 as cited in Griffiths & Petrick, 2001, p.1573). Sustainability strategies' input and output have been measured, but a need remains to address the role of organisational systems "including people, culture, human development, change management and innovation" (Lozano, 2012b, p.24). Companies consist of subcultures and are subject to various intra-organisational differences (Lozano, 2012a). Moreover, sustainability strategy implementation may encounter social and psychological obstacles (ibid.). Different concepts and theories can be used to analyse these 'soft' issues: organisational culture, change management theory, organisational learning and other organisational change theories (ibid.). A literature review of these theories will help to identify success factors and barriers based on soft issues, which can point out problematic areas and such that deserve more emphasis or are even missing within the corporate sustainability approaches map. The review of theoretical discussions and development of a mapping methodology will provide a sound knowledge base to conduct empirical research on CSS implementation.

1.1 Case Study Justification

For this research an in-depth case study of one company and its CSS implementation will take place. A study of the United Nations Industrial Development Organisation (UNIDO) showed that small- or medium-sized enterprises (SMEs) make out 90% of the world's companies and are responsible for around 50% to 60% of the worldwide employment (Forstater et al., 2006). It can thus be inferred that SMEs "aggregate achievements have a major effect worldwide" (Jenkins, 2006, p.242). This justifies that much attention should be paid to CS development at SMEs. Within the area of sustainability management, however, "conventional approaches to CSR are based on the assumption that large companies are the norm and have been predominantly developed in and for large corporations (Jenkins 2004a)" (Jenkins, 2006, p.241). After a long period of CSR and sustainability research that focused almost exclusively on large companies, the realization of their importance and their environmental and social impact has led to a growing interest in the role of SMEs for CS in recent years (ibid.). However, in most cases this research is restricted to well-known frontrunners or SMEs that already underwent a development towards a successfully integrated CS strategy. Such success stories constitute useful best practice examples and can also contribute through 'lessons learned' (see e.g. Jenkins, 2006; Murillo & Lozano, 2006). Little research has, however, focused on SMEs,

which follow laws, regulations and are aware of the CSR and sustainability movement, but do not constitute such a best practice example. SMEs that are slowly taking steps towards a development in that direction, but may in fact never or not for years get to the stage where they have a successfully integrated overarching strategy, sustainability reporting or any of the other well-known sustainability 'indicators'. The practice and struggle of such companies can teach theory relevant lessons that are often overlooked in the best-practice SME research. It is therefore that the in-depth case study analysis of this research will, instead of a large multinational, focus on an SME, which cannot (or not yet) be classified as a sustainability frontrunner. The insights that will be developed through literature reviews (chapter 3 and 5), a mapping methodology (chapter 4.3) and the case study analysis (chapter 6) will thus contribute to solving the puzzle of how companies that are struggling to implement an CSS can overcome these challenges through an improved and integrated understanding of CS management, approaches, and organisational culture.

1.2 Research Objective and Research Relevance

Much research has been conducted surrounding the growing field of corporate sustainability strategies. However, despite a large amount of information, methodologies and frameworks, considerably few companies have actually successfully integrated a corporate sustainability strategy (Hussey et al., 2001; Doppelt, 2003; Siebenhüner and Arnold, 2007, as cited in Lozano 2012a). Especially SMEs are often still struggling on the pathway to managing and implementing sustainability strategies (Graafland et al., 2003). This research hence aims to develop (1) a sustainability approaches mapping methodology, (2) establish crucial organisational change elements for sustainability, (3) to integrate them through a systems view on CS management and (4) apply these theoretical building blocks to an holistic, in-depth case study in order to analyse how these theoretical insights could be used to improve the corporate sustainability strategy building and implementation in the practice of the case company. The case study was undertaken in a medium-sized Dutch company in the basic metal industry that is facing the challenge and opportunity to integrate corporate sustainability into its business and can thus provide first hand empirical insights into change management in action and serve as an example of the application of the corporate sustainability approaches map.

The **research question** that will be posed is:

How can key elements of theoretical corporate sustainability approaches be matched with corporate sustainability strategy implementation in practice in such a way that it can help companies to understand how they can improve their sustainability performance?

The research question incorporates three core elements which will be investigated with the help of three **sub-research questions**:

- (1) How can current and future CS approaches be mapped to improve understanding about the differing theoretical approaches?
- (2) How can organisational change management be used in practice to the purpose of sustainability strategy implementation?
- (3) How can missing links and elements in a company's sustainability management be identified and improved?

2. Methodology: Data Collection and Analysis

In order to answer the research question a number of different and primarily qualitative data collection methods will be used:

- (1) Desk research
- (2) A Case Study (qualitative)
 - a. Semi-structured Interviews (with key actors in the company)
 - b. Observations in the company environment
 - c. Analysis of internal company data and construction of a timeline
 - d. SWOT analysis²

The desk research will mostly serve to answer the first two sub-research question, whereas the case study and the application of the derived methods to the case study can provide important insights to answer sub-research question three (see above, p.3). To use a number of different methods to collect the data will help to provide a more valid result. In chapter 6 the case study analysis will be conducted through the integration and application of the previously deducted theoretical and methodological elements. Figure 1 gives an overview of the research process, which will be explained in detail in the following.

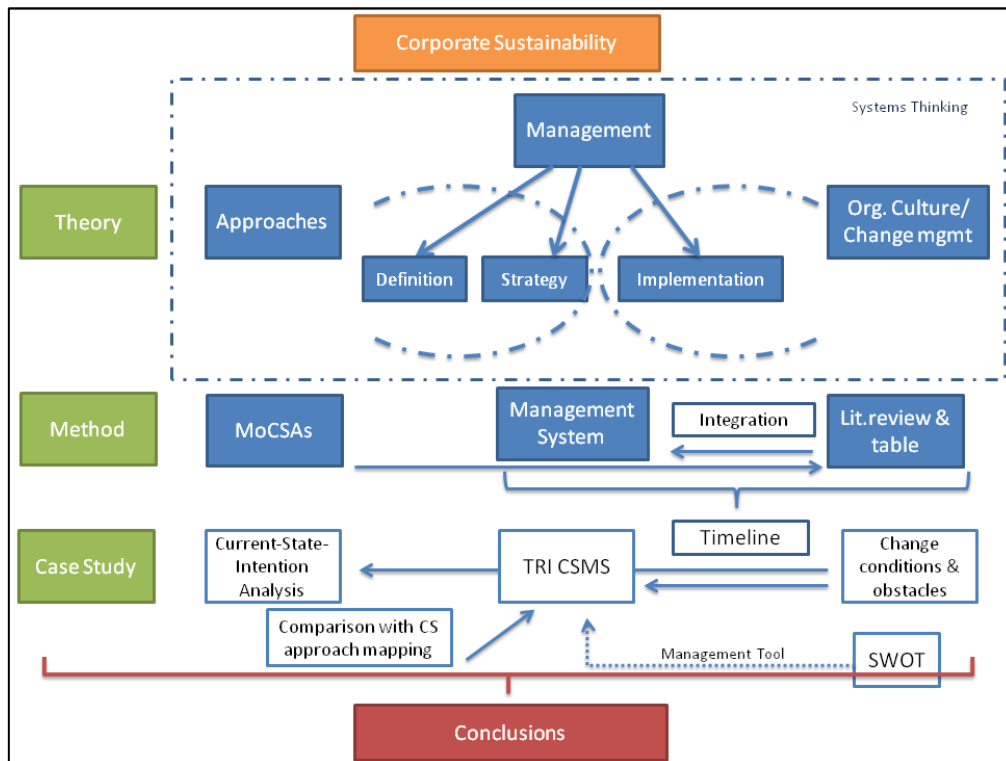


Figure 1 - Research process

2.1 Desk Research: Literature Review and Method Development

For a sound theoretical research base that serves the aim of this study, first a literature review on four elements of CS will take place: (1) CS management and (2) systems thinking, (3) CS approaches and (4) organisational culture, organisational learning and change management. Three phases of CS management (as highlighted in Figure 2) will hereby be in the focus of the research, namely the definition of CS in connection with a vision creation, strategy development and the implementation

² A SWOT analysis is a business management tool that identifies strengths, weaknesses, opportunities and threats a company faces (Kurtilla et al., 2000).

of the CSS. Hereby, both CS approaches theory as well as organisational culture theory overlap with CS management. CS approaches offer a recipe to success based on values, whereas the second, organisational culture and change, is analytical and thus provides a better identification of barriers and requirements for CS implementation. The CS approaches will be used to generate insights on vision and strategy creation, whereas organisational culture and change management theory can enhance the understanding of implementation through revealing factors which influence this process. Overall, the integration of these complementary theories aims to provide a systems view on the CS implementation process in the case study in question.

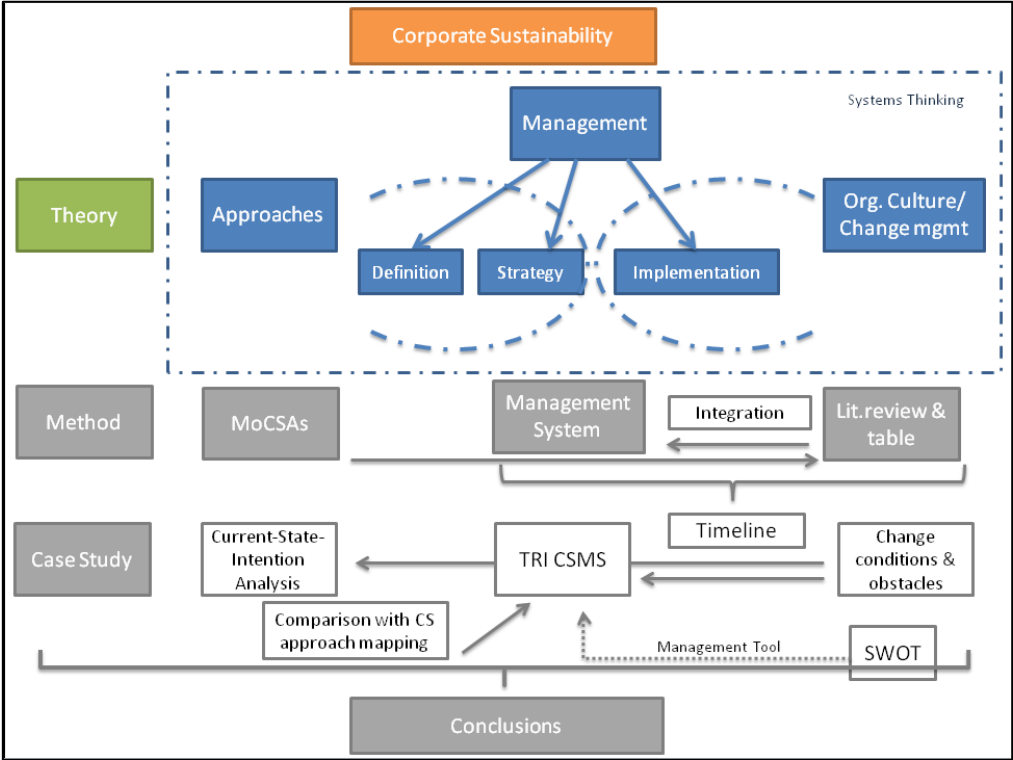


Figure 2 - Theory development

CS approaches are numerous and exhibit different characteristics. In order to put them into perspective a mapping methodology (MoCSAs) will be developed and applied to seven sample CS approaches. From the literature review on organisational culture and change management, supporting conditions for and obstacles to organisational change will be derived and linked to the elements of CS approaches as far as this is possible. Moreover, an integration of a CS management system (CSMS) and supporting conditions for organisational change will illustrate the interconnectedness of this technocratic-based view on CS on the one hand and the social perspective on the other hand. Figure 3 emphasizes the method stage of the research process.

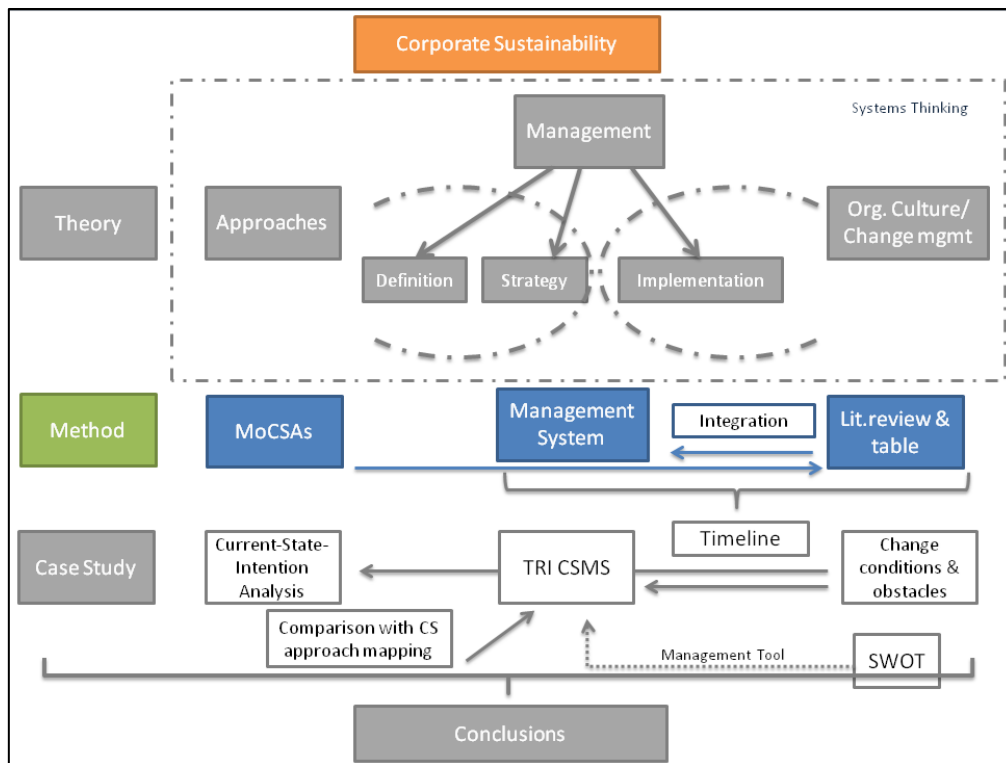


Figure 3 - From theory to method

2.2 Data Collection

2.2.1 Opting for a Qualitative Approach: a Case Study

After establishing the theoretical background and research approach, methods of empirical data analysis can connect theory and practice. Methods serve different ends, which are defined by the knowledge claims and strategies of inquiry chosen by a researcher (Creswell, 2003). The research questions as defined above ask to improve understanding, look at multiple participant meanings and a social and historical construction, which is according to the model of Creswell (2003) connected to social constructivism³. Such research is concerned strongly with meaning and understanding of the world (ibid.). Cultural, social, ethnographic and historical processes play an important role in this concept, as they do in this research, because the case study that will be conducted makes sense of the observed developments by contextualizing them (sub-research question 1 and 2). However, it does not take place without an aim in itself, which is to help improve CSS (sub-research question 3). Such a research agenda can be mainly connected to advocacy and participatory knowledge claims, best studied through case studies (ibid.). Both knowledge claims are based on qualitative data collection and this research is therefore based on such.

³ Social constructivism was coined by the social psychologist Kenneth Gergen in the late 1970s and early 1980s, who propagated in a series of essays to turn away from experimental social psychology, which only provides short snapshots of events or people's behaviour, to research in-depth narratives of individual lives (Rosenthal & Rosnow, 2008, p.7). There has been much controversy about this view (ibid.) and various forms of social constructionism research have emerged (Samra-Fredericks, 2008, p.130). This research follows up on the knowledge claims that Creswell (2003) connects to social constructivism, but does not claim to be a full representation of social constructivism research, nor the methodologies common for this approach. For a critical analysis of the use of social constructivism research in management and organisations studies see Samra-Fredericks (2008).

A qualitative approach can be seen to be connected to narratives, phenomenologies, ethnographies, grounded theory or the very case study method (Creswell, 2003). A case study is a research method that can help to make sense of “holistic and meaningful characteristics of real-life events” (Yin, 2009, p.4). The data is collected with the help of different data collection procedures over a certain amount of time (Creswell, 2003). A case study analysis in the field of CS is a relevant methodological instrument as many researchers have established that CSS can never be a one-size-fits-all solution and need to be carefully applied to each unique company (Salzmann et al., 2005). The choice of a case study requires the utilization of suitable data collection methods. For this research a participant observation has taken place, which is a method stemming from ethnographic research. The terms ‘ethnographies’ and ‘participant observation’ are often used interchangeably (Delamont, 2004). In the following section, the applicability of ethnographies/participant observation for this case will be justified.

2.2.2 Participant Observation: gaining a Process Perspective

Ethnographies are strategies, “in which the researcher studies an intact cultural group in a natural setting over a prolonged period of time by collecting, primarily, observational data” (Creswell, 2003, p.13). This research method is mainly associated with anthropological or sociological research. However, due to the research setting in which it was possible to be situated on a daily basis for six months at the company to be studied, observations play a particularly important role for this case study. Such a setting allows for collecting observational data (Creswell, 2003). Moreover, it permits the research process to be adapted according to “the lived realities encountered in the field setting” (LeCompte & Schensul, 1999 paraphrased in Creswell, 2003, p.14). Bernard’s description of participant observation (1988) adds to this an important characteristic of this data collection method: acclimatisation. If a researcher is accepted as part of the community and culture, people behave according to their usual patterns (ibid.). This enables the researcher to understand the tone in language and the way people communicate and in consequence to get to more realistic interpretations of the situation, improving in particular the validity of interviews, surveys or similar methods (ibid.).

The theoretical background of this research is based on organisational culture and change theory. In this field one of the most influential models was developed by Schein. Schein differentiates between research methods to identify an organisational culture that take place either via (1) internal people or (2) external people using clinical research or (3) interviews (Schein, 1997, pp.147 & pp.169 as cited in Baumgartner, 2007). The term clinical research is used, as the model originally comes from the area of organisational psychology, but it refers to the placement of an external person in the research context to become a member of a group, which can thus also be applied for this case study. Hereby, it should be noted that this experiencing of the group culture, while being very time-intensive, can yield better results than interviews (ibid.). Schein goes as far as to advise against the usage of surveys as the researcher cannot be sure about which aspects of the culture need to be considered, nor may (s)he be able to identify collective phenomena from survey answers (ibid.). By entering the respective company as both a researcher and an intern with the task to support the implementation of a CSS, it was possible to become integrated and accepted into the company culture to a greater extent than a researcher that approaches a company from the outside with interviews or surveys. The importance of such an approach is reflected in the following quote:

“It is fairly easy to identify organisational changes once they have occurred, but it is more difficult to analyse them whilst they are ongoing, and even more difficult to predict their direction and tempo (Benne and Birnbaum, 1969)” (Lozano, 2012a).

This process data collection method is of particular use for the case study as it was aimed to compare findings of the theory of change management for corporate sustainability with an actual process within a company based on past, present and future context in which the company functions.

2.2.3 Limitations of the Participant Observation Approach

Before diving into the research phase, the researcher should be aware of the disadvantages or potential biases her/his research method and data collection approach may bring with them. It is essential for participant observation that the researcher does not “disrupt ‘things as usual’”, in order to be able to collect unbiased behavioural data and other information (Gomm, 2008, p.279). This often excludes the use of audio or video recording and thus a researcher will often have to make written notes, which in themselves are frequently biased, because taking notes entails decisions on what to write down and what to leave out that have to be taken within split seconds (Gomm, 2008). The biggest hazard is however that researchers “will come to share the same biases and prejudices as those they research” (Gomm, 2008, p.279), an effect which was described as a bias of sympathy by Becker in 1967 (*ibid.*). This effect may be even stronger, as a researcher will make closer relationships with some of the people in the group than others (*ibid.*). In addition, interestingly it is likely that those kind of people that build close relationships with the researcher are not typical in their behaviour or thinking (Labov, 1973, as cited in Gomm, 2008) and therefore do not represent the collective organisational culture.

2.3 Data Analysis and Discussion

Figure 4 gives an overview about the various elements that will contribute to the case study analysis and discussion (Chapter 6). After the empirical data collection and method development the case study will be introduced and analysed with the help of the previously derived theoretical knowledge. A timeline of the CS development will illustrate the management process and provide the necessary information to apply organisational culture and change management theory to the case to detect the underlying company culture and obstacles to change. The timeline will consist of three levels, showing management decisions and implemented projects and relate these to two key performance indicators (CO₂ emissions and steel waste). The application of the mapping method will serve as a gap analysis of current state and intentions at the case company and integrates findings, concerning supporting conditions for and obstacles to change, from organisational change management theory. Furthermore, the CSMS, as adapted for organisational change management, will be applied to the case company. In the case discussion, it will be inquired in how far the mapping of CS approaches can reveal bridges that these could provide to overcome the current state-intention gap. Moreover, the central themes of the case analysis will be detected and discussed. Lastly, the application of the SWOT analysis, an actual business management tool, rounds up the analysis. The SWOT analysis is used to display the available supporting conditions for and current obstacles to change. It indicates how organisational culture and change management can find a place in CSMS. From this integrated data analysis, conclusions can be derived that show how key elements of theoretical corporate sustainability approaches can be matched with corporate sustainability strategy implementation in practice in such a way that it can help to contribute to a systems view on CS implementation and be used to support the improvement of sustainability performance.

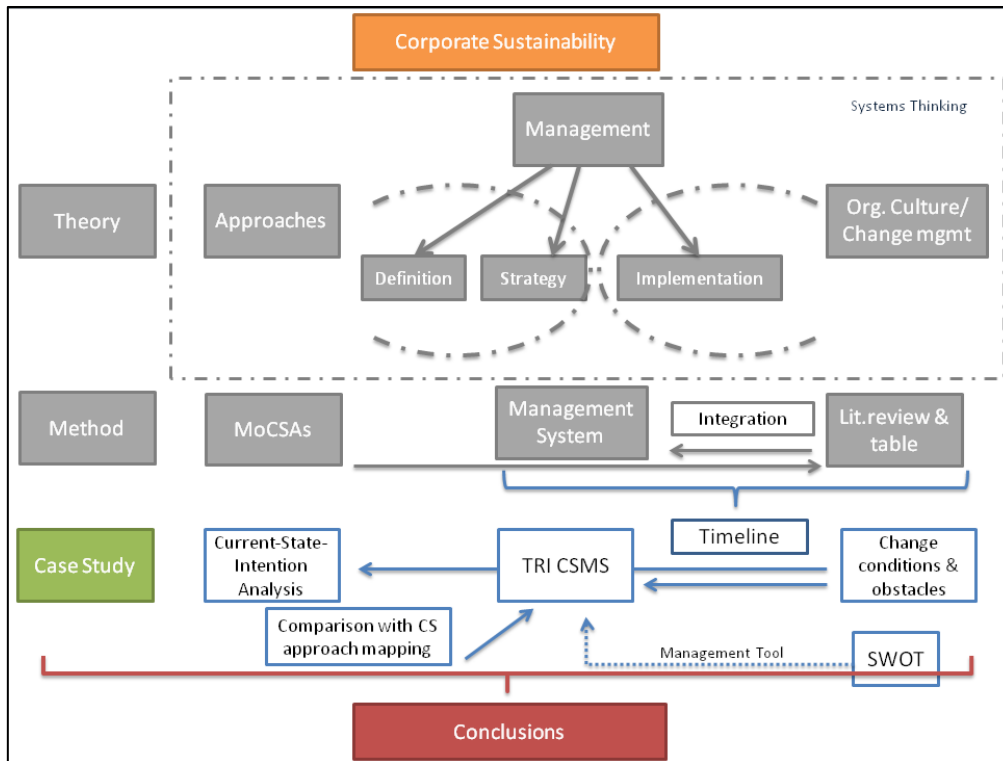


Figure 4 - Application of the theory to the case study

3. Corporate Sustainability

“There can be little doubt that sustainability is one of the most frequently used but least understood terms of our time” (Hart, 2010, p.79). This quote by Hart is a concise summary of the debate about sustainability, sustainable development, corporate sustainability, corporate social responsibility and many more terms that can be added to this list. A definition of sustainable development has been given in the introduction of this paper; the following sections aim to provide some more clarity on those terms, which are of crucial importance to companies that opt for sustainable development: CSR and CS.

3.1 Corporate Social Responsibility

The aim of this research is to provide insights on how to map CS approaches. Before approaching a definition of this concept it is indispensable to first shed some light on the concept of CSR. This is, because some people have described CS, on the one hand, as a part of CSR or, on the other hand, as taking CSR to the next – and more inclusive - level (see for instance Wempe & Kaptein, 2002; Panapanaan et al., 2003).

There exist various definitions of CSR, and in addition to the sheer number some have been criticized to place a bias on certain aspects, which can be seen as having added to the confusion surrounding the question what CSR actually is (Dahlsrud, 2008). The typical problem which comes into existence here is that CSR is such a wide phenomenon so that any definition encompassing all of its aspects would be too broad for academic use and even more so for any corporation that wants to apply CSR in practice (Van Marrewijk, 2003). Already in 1972, Votaw realized that the danger of the

term social responsibility is that “it means something, but not always the same thing, to everybody” (p.25).

This research follows on Dahlsrud’s perspective on CSR as a social construct, which is therefore context-specific (2008). From this starting point Dahlsrud compared 37 definitions of CSR to find out more about the differences and similarities between them. He did so by coding them according to the five relevant dimensions of CSR: social, economic, environmental, stakeholders and voluntariness. Meaning that if a company wants to adhere to all of these five CSR dimensions its strategy will aim to integrate stakeholder participation, other social concerns, economic considerations and environmental issues on a voluntary basis. One of the simplest definitions that includes all of these five dimensions (ibid.) was developed by the Commission of the European Union (2001): CSR is “a concept whereby companies integrate social and environmental concerns in their business operations and in their interactions with their stakeholders on a voluntary basis”. However, interestingly enough while four of the CSR dimensions were present in 80-90% of the researched 37 definitions, the environmental dimension was only found in 59% of them (Dahlsrud, 2008). CSR is thus in many cases biased towards economic and social concerns.

3.2 CSR versus Corporate Sustainability

While CSR has been attested a bias away from environmental issues, CS has been regarded in the past by many as the opposite: having a bias towards environmental aspects and neglecting the social and profit part of the equation (Van Marrewijk, 2003). The discussion makes clear that CSR and CS are not clearly separable. Therefore, several different integration schemes have been introduced. Figure 5 shows a scheme by Wempe & Kaptein (2002) (as cited in van Marrewijk, 2003) that relates CSR to the 3Ps and CS to be the ultimate goal of all CSR activities.

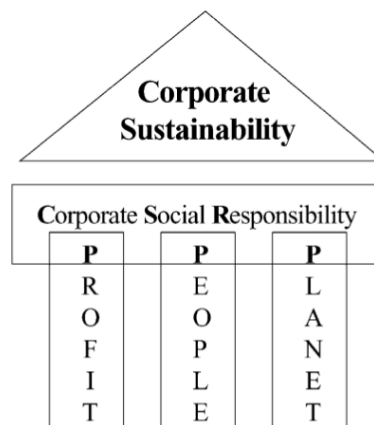


Figure 5 - Relationship between CS, CSR and the three Ps (Wempe & Kaptein, 2002 as cited in Van Marrewijk, 2003, p.101)

Figure 6 shows a similar classification. Hereby CSR is described as social responsibility and is seen as the social pillar, which together with economic and environmental responsibility constitutes corporate responsibility. Corporate responsibility then is again a part of the broader CS. In this perspective social responsibility is reduced to the social pillar and therefore an equal treatment of the three pillars in CSS is endorsed. Moreover, Figure 6 shows the interconnectedness of the three

pillars, which should not be understood as isolated from each other, because this has led in the past to competing views that play off the different pillars against each other (Kleine & Hauff, 2009).

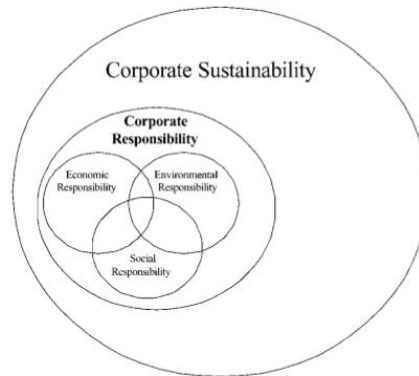


Figure 6 - CS and CSR relationship (Linnanen & Panapanaan, 2002 in Van Marrewijk, 2003, p.102)

Due to the many similarities between the two concepts and an increase of importance of the environmental dimension for CSR and an increase of the social and economic dimension in CS some have suggested that the two concepts have become synonyms (see e.g. Keijzers, 2002, as cited in Van Marrewijk, 2003). However, others defend a continued distinction of the concepts:

“I would recommend to keep a small but essential distinction: Associate CSR with the communion aspect of people and organisations and CS with the agency principle. Therefore CSR relates to phenomena such as transparency, stakeholder dialogue and sustainability reporting, while CS focuses on value creation, environmental management, environmental friendly production systems, human capital management and so forth.” (Van Marrewijk, 2003, p.102).

Therefore, for this research the following descriptions of CSR and CS will be used. *CSR refers to voluntary company activities that include social, environmental and economic concerns, which are reported on transparently and which aim to include stakeholders. CS includes these activities but refers to a much broader management system and shift in company culture.* A straight-forward definition of CS which incorporates these concepts can be found in the Dow Jones Sustainability Index which states that CS “is a business approach that creates long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments” (n.d.).

3.3 Corporate Sustainability Management

The CS definition that has been derived, has one thing in common with all other CS and CSR definition, it still leaves much room for interpretation, with regards to what actions will actually take place during the CS implementation. CS approaches try to determine exactly this in a rather technocratic and often step-by-step manner. Organisational change towards sustainability embraces the soft issues on the other end of the spectrum. Both, however, have in common that they aim to define and improve the CS definition, strategy and implementation of CS at a company. The strategy is hereby defined as “the pattern or plan that integrates an organisation's major goals, policies and action sequences into a cohesive whole” (Quinn, 1980, p.3). In the case of a CSS this would thus be the pattern or plan that integrates an organisation's CS goals, policies and action sequences into a cohesive whole. It follows implementation should then stand for the “set of activities designed to put into practice an activity or program[me] of known dimensions” (Fixsen et al, 2005), where the activity

or programme is represented by the CSS. Van der Heijden et al. (2012, p.536) add the 'soft' dimension of sustainability implementation, namely that this implementation entails "embedding the concept by engaging people throughout the organisation in sustainability efforts". Both theoretical spectra, strategy and implementation, need a form of management for their translation into practice. CS management is therefore understood as a management system that provides for the strategic implementation of CS.

When it comes to CS management⁴ it has been found that in many cases companies shape their own sustainability definitions and customized programmes taking into consideration different factors such as stakeholders, industry and the type of product or service that is sold (Cowan et al., 2010). However, there are also a number of key characteristics that are to be found in a large majority of all sustainability programmes, namely leadership that commits to sustainability, (measurable) goal development, reporting, as well as evaluation through e.g. external audits and the ISO14001 certification (ibid.). The three key areas of (1) identifying sustainability issues and goal setting, (2) measuring progress, (3) communicating efforts and (4) corrective action have been identified and included in their respective model of CSS making by a great number of researchers (see e.g. Azapagic & Perdan, 2003; Cowan et al., 2010; Panapanaan et al., 2003; Cramer, 2005; Werbach, 2009; Hohnen & Potts, 2007). Maon et al. (2009) propose a model that follows the steps (1) awareness raising in the top-management, (2) formulating a CS vision and values, (3) changing organisational behaviour and lastly (4) anchoring the change. Many CS management schemes follow the Plan-Do-Check-Act (PDCA) cycle, which is used within the ISO certification schemes and widely accepted by companies. For this research a scheme by Azapagic was chosen as the point of departure, due to its claim to follow a systems approach towards CS management, which is in line with the aim of this research to provide a more integrated view on CS management. The scheme is depicted below in Figure 7.

⁴ In this context it is not considered why a company actually starts to develop an interest in CS. The motivational drivers of a company to engage with CS can differ and have been researched extensively. They have been characterized to be of legal, financial or ethical nature (Hendrey and Vesilind, 2005, Dummett, 2006, Graneck and Hassanali, 2006 as cited in Cowan et al., 2010), as efficiency-related, market-related, image-related, and risk-related (Wagner, 2007, in Ameer & Othman, 2011) and to arise in the context of media pressures, mimicry and international experience (Bansal, 2005). The focus of this research is on the development of a CS management, once the desire to engage with CS already arose. Motivational drivers will, however, be generally included in the mapping methodology as developed in chapter 4.3).

SYSTEMS APPROACH TO CORPORATE SUSTAINABILITY

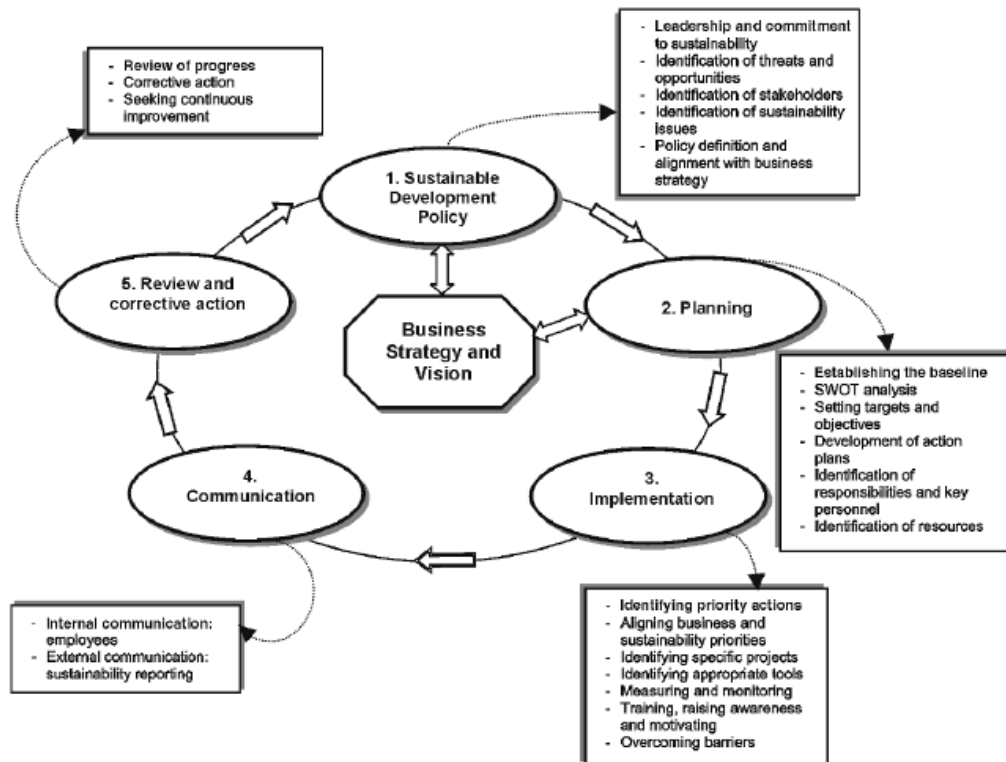


Figure 7 - Corporate Sustainability Management System (Azapagic, 2003, p.305)

Similar structures following policy formulation, planning, implementation, communication and revision have also been proposed by other researchers such as Panapanaan et al. (2003) or Burke and Gaughran (2007) and can be, despite differences in the details, considered to be generally accepted. According to CS management, the evolution of CS within a company and its execution on the operational level thus has to follow a number of steps, but the content of these cannot be developed without certain values and principles in mind. The backbone for a CS management is therefore a clear understanding and approach towards CS, which a company needs to possess, and a large theoretical body has attempted to create remedy for exactly this issue.

3.4 Systems Thinking

The previous chapter has argued for a management *system* perspective of CS, a call that is strongly supported by the systems thinking proponents in the sustainability field. *Systems thinking* “is the art and science of linking structure to performance, and performance to structure - often for purposes of changing structure (relationships) so as to improve performance” (Richmond as cited in Hjorth & Bagheri, 2006, p.79). Despite ever growing human interconnections and relations on the planet as well as increasing knowledge on the connectedness of ecosystems and the complex nature of phenomenon like climate change, modern science has continued to follow up on the paradigm of specialisation (Hjorth & Bagheri, 2006). Systems thinking sees “a need to accept Leibniz’s idea that within an entity of interacting parts, no part can be changed without triggering changes all over the whole” (p.75). Therefore instead of the old linear thinking and study of processes in isolation, the understanding or reality must emphasize the relationships among the different parts of a system

(Hjorth & Bagheri, 2006). By defining the rules of a system and structuring it, systems thinking can enable people to understand complexity, instead of being overpowered by it (ibid.). While systems thinking at first seems a rather abstract idea, in fact it is meant to be applied to everyday life and work problems and to improve understanding of them. The revelation that stands at the beginning of it is the realization that the answer to the problem at hand lays “in the system and how the organization thinks” (p.80).

“In systems language, ‘changing structure’ has a precise meaning that has nothing to do with throwing people out, tearing things down, or spending money. In fact, doing any of those things without real changes in structure clearly will just result in different people spending as much or more money in a new system that produces the same old results. (...) The same combination of people, institutions, and physical structures can behave completely differently, if its actors can see a good reason for doing so, and if they have freedom to change.” (Hjorth & Bagheri, 2006, p.80).

To create a new system that produces different results and to provide a good reason for actors to change their behaviour is thus a core challenge for CS.

4. Mapping Corporate Sustainability Approaches

Chapter 4 was written jointly by Sonja Koehler and Thomas Jankov

Within the subject area of CS, various approaches have been developed throughout the last decades and all of them aim at being (at least partly) the corporate response to the severe sustainability challenges companies are facing. The great amount of sustainability approaches that managers can access has resulted in more confusion and uncertainty on how to implement a feasible CSS (Van den Brink & van der Woerd, 2004, p.187; Waage et al., 2005). There is thus a clear need to provide a structure, in which to assess and compare sustainability approaches to facilitate an improved overview. Such an overview will be most beneficial if it decodes the different drivers and characteristics behind the approaches (Lozano, 2012b). Therefore, in this chapter a mapping methodology will be developed that can serve these aims. Moreover, identifying an academically sound way of matching specific tools with specific approaches could offer great value for companies, as there is still a lack of understanding of how sustainability approaches such as CSR can be successfully implemented by the support of selected tools in practice (Waage et al., 2005; Van den Brink & van der Woerd, 2004, p.187). In this research, tools are only considered as concrete elements of approaches which support the operational execution of them but will not be considered in further detail. The ‘house of corporate sustainability’ can serve as visualization. Principles and philosophies stand for the underlying values and ideologies that the approaches are built upon.

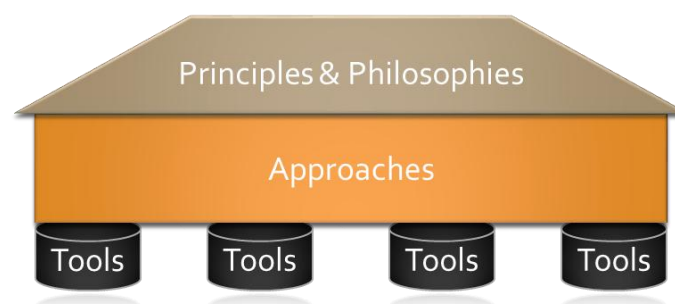


Figure 8 - House of Corporate Sustainability

The main goal of this joint research part will consequently be to develop a mapping methodology, to assess seven sample approaches within this methodology and compare the findings with each other. Furthermore, the potential practical application of the methodology in research and practice will be elaborated on. Lastly, this methodology will be used in a later stage of the individual empirical research to connect theory and practice.

4.1 Terminology

Within the discipline of sustainability, a vast number of different terms have been developed for ideas, which are in reality often very similar. This scientific ‘jungle’ is not always beneficial for carrying out conceptual research (Dahlsrud, 2008). What is described by one author as an initiative might for example be described by another author as a concept. The following figure is not intending to provide a novel way of classifying this scientific terminology and neither it is argued that all frameworks, strategies, theories, etc. are always ‘approaches’ in the conventional understanding, instead its intention is to provide clarity to the reader on how these terms are understood for this research. In particular, a clear differentiation of what is seen here as an approach and what as a tool is essential to the reader’s understanding of the developed methodology. Figure 9 shows the differentiation that was made.

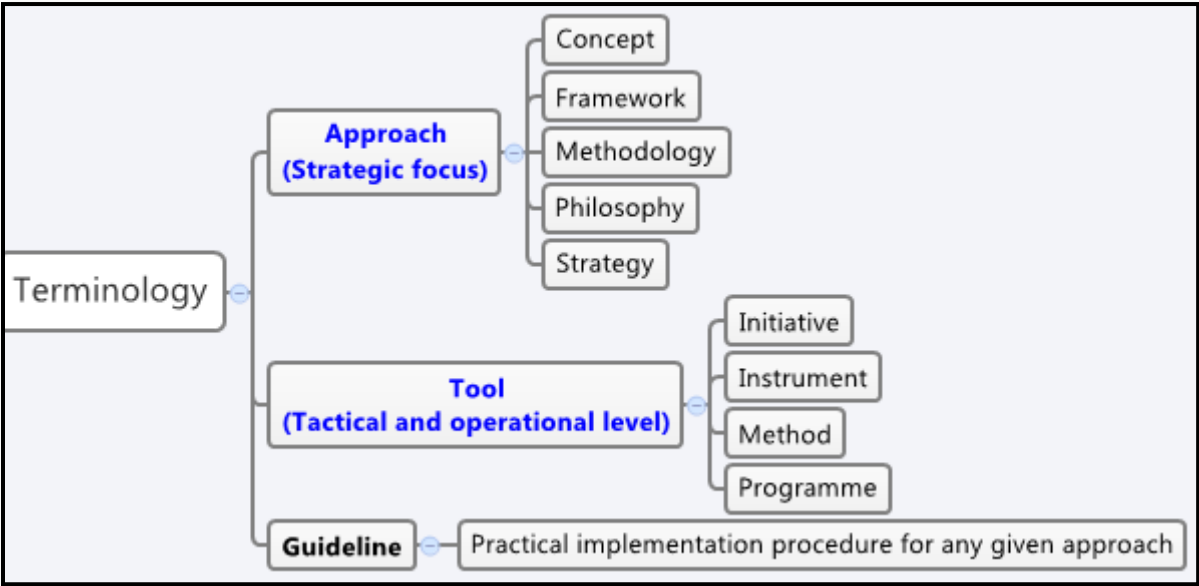


Figure 9 - Categorization of used terminology

The uncertainty about terminology meaning is not only a barrier for academics but often even more so for practitioners. As stated by Waage et al. (2005), many corporate decision-makers struggle to develop a clear understanding of sustainability and its surrounding concepts (principles, strategies, guidelines to name just a few), which has severe consequences for the implementation of sustainability strategies in the corporate world.

Generally, management theory makes a distinction between the strategic, tactical and operational level on which management actions are taken (Schmidt & Wilhelm, 1999). However, in this research, it was chosen to use only a two-fold structure, in which the division between *approaches* (strategic, long-term and rather ‘broad’ focus) and *tools* (specific, practical ways of carrying out the intended plan) was made (see Figure 9). The mapping methodology aims at assessing only the approaches (strategic focus) and is not meant to be applicable for the assessment

of tools (tactical and operational level). However, in this research the academic distinction between the tactical and operational level is not relevant and thus not elaborated on in further detail. In future research, it could however be useful to further split the 'tools' section up into tactical and operational tools in order to serve the needs of practitioners during the implementation process better.

The mapping methodology will be developed with the intention to assess sustainability approaches. Guidelines however, are not meant to be assessed since they often do not entail a concrete philosophy and are rather seen as supporting instrument to implement certain approaches. Thus, they are not seen as belonging to either one of the previous two categories (approaches and tools), because they ideally describe the process of corporate sustainability implementation and therefore are the transformation and consolidation of approaches and tools into an inclusive and practical application.

4.1.1 Approaches

According to the Oxford dictionary, an approach is defined as "a way of dealing with a situation or problem".⁵ This simple definition confirms the suitability of the term 'approach' since the most prominent sustainability approaches were developed in order to deal with sustainability challenges. Thus, an approach will be seen as an umbrella term for concepts, frameworks, methodologies, philosophies, strategies and theories. Even though the precise definitions for the previous terms are not necessary for understanding the mapping-methodology which will be presented later on, they might be important for further research and evaluation of new approaches and will be provided in the following. A **concept** is defined in the business dictionary⁶ as "the reasoning behind an idea, strategy, or proposal with particular emphasis placed on the benefits brought on by that idea". Thus, a concept describes and explains the why and how question behind ideas, strategies or proposals in order to point out the benefits of it. Especially, the 'benefit' notion is of central importance within sustainability approaches since there exists still some doubt in the business community about the (financial) benefits of CS (Lankoski, 2008). **Frameworks** can have significantly different characteristics throughout the scientific debate but are generally seen as abstract guidelines that can help directing through a research field. According to the USC Library⁷, frameworks are defined as: "the structure and support that may be used as both the launching point and the on-going guidelines for investigating a research problem". Another term of importance is **methodology**, according to Charvat "a methodology is a set of guidelines or principles that can be tailored and applied to a specific situation" (2003, p.3). Specialized in the field of project management, he further elaborates that this might be captured in the form of "a specific approach, templates, forms, and even checklists used over the product life cycle" (2003, p.3). According to the Business Dictionary⁸, a **strategy** is defined as: "a method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem". Thus, certain strategies could aim specifically at fostering corporate sustainability through a chosen plan and can therefore be seen as approaches as well.

As became clear from all given definitions, the terms are all focused on strategic elements and thus match the understanding of the umbrella term of 'approach'.

⁵ <http://oxforddictionaries.com/definition/english/approach>

⁶ <http://www.businessdictionary.com/definition/concept.html>

⁷ <http://libguides.usc.edu/content.php?pid=83009&sid=2772758>

⁸ <http://www.businessdictionary.com/definition/strategy.html>

4.1.2 Tools

It has been established in the last section that a sustainability approach constitutes a strategic thought model, which provides underlying values and serves as an orientation for the way in which sustainability (which is then also defined according to the approaches' values and principles) can be approximated. Change, however, will only take place if the strategic thought model is supported and carried out with the assistance of tools on the tactical and operational level (Hardjono & de Klein, 2004). In order to select relevant tools for the implementation of sustainability approaches, it has to be clarified at the beginning what can be understood as a tool.

A tool is defined by business dictionary⁹ as "an item or implement used for a specific purpose". This purpose can be seen in this research as for example the support of the practical implementation of a specific sustainability approach. In other words, the authors define a tool for this purpose as an instrument or method used to achieve a certain goal. The array of tools for corporate sustainability is very broad and may for instance refer to tools that manage environmental risks or concerns, e.g. a Life Cycle Assessment (LCA), the strategy development, e.g. a Sustainability Balanced Scorecard (SBSC), or social concerns, e.g. motivational workshops. Since this research will not elaborate on specific tools, an overview about common tool categories with relation to sustainability approaches will be provided:

- **Accounting** tools (e.g. Life cycle costing)
- **Assessment** tools (e.g. Driving Forces-Pressures-State-Impacts-Responses Framework)
- **Human Resources** tools (e.g. Internal Success Stories, confidential person)
- **Communication** tools (e.g. Social Media, Sustainable Marketing)
- **Controlling** tools (e.g. (Sustainability) Balanced Scorecard)
- **Creativity** tools (e.g. Brainstorming, Six thinking hats)
- **Decision making** tools (e.g. Grid analysis, Pareto analysis)
- **Problem solving** tools (e.g. Cause & Effect diagrams, flow charts)
- **Project management** tools (e.g. Gantt charts)
- **Real estate assessment** tools (e.g. Building Research Establishment Environmental Assessment Method)
- **Strategy finding** tools (e.g. Decision trees, Porter's five forces, SWOT)

Obviously, more tool categories exist and further research about those as well as the connections between tools and sustainability approaches is highly recommended. Many business tools were not specifically developed to serve the needs of implementing sustainability approaches but rather for a general purpose within the business context. Connecting those with specific sustainability approaches is seen by the authors as a next step towards operationalizing CS in a more successful way.

It has now been clarified what can fall under the term sustainability approach as well as a tool. After the approaches have been collected, selected according to relevance and analysed, they will be mapped with the help of an axes-scheme. This will illustrate the different aims and key characteristics of the approaches, which can then be used for the following purposes, the (1) creation of an overview and increased understanding, (2) a gap analysis of ambitions and achievements by companies, (3) a comparison of how companies see and apply approaches and how it is seen by

⁹ <http://www.businessdictionary.com/definition/tool.html>

academia, (4) as a quick assessment tool to create a baseline for decision-making and lastly (5) for a discrepancy analysis between theory and practice.

4.2 Introducing seven selected Sustainability Approaches

The following table (sorted by hits in Scopus) provides an overview about the most prominent approaches within the field of sustainability and their search hits on prominent academic search engines. This selection is not claimed to be complete but rather to symbolize the range of concepts that exists. The pre-selection of the list is based on the appearance of approaches in the sustainability literature (see for example Rob ert, 2000; Lozano, 2012b). In order to increase the precision of the findings, each term was searched with quotation marks.¹⁰

Table 1 - Sustainability approaches and the number of hits in Scopus, Jstor, google scholar and the 'web of knowledge' (Retrieved on 29.01.2013)

Approach	Scopus (search in title, abstract, keywords)	JSTOR	Google scholar Netherlands	Web of Knowledge
Corporate Social Responsibility	4203	4629	140000	3504
Life-cycle (Management)	2360	233	27300	711
Environmental Management Systems	2119	483	26000	578
Zero Emissions	1775	187	23300	306
Cleaner Production	1667	288	42500	764
Industrial Ecology	1425	733	30200	1057
Eco-Efficiency	1042	296	22700	768
Footprint Analysis	989	356	13100	690
Triple Bottom Line	568	403	24500	322
Biomimicry	347	130	6680	303
Design for the Environment	187	80	4180	115
Cradle to Cradle	143	80	6240	62
The Natural Step (Framework)	88	1549	24400	48
Natural Capitalism	27	182	4240	27
Radical Industrialist	1	7	87	1

Table 1 shows how many search hits each pre-selected approach received in Scopus, Jstor, Google scholar and Web of knowledge. The intention was to choose the first seven highest-ranked approaches (as a higher number would go beyond the scope of this research) as sample approaches to be mapped. The colours in the table illustrate the amount of hits, red colours meaning a very low amount of hits, up to green colours that indicate a large number of hits¹¹. As any type of search engine exhibits biases, e.g. due to their target readers it was decided to use a number of different search engines in order to be able to detect biases and to purify the ranking results of such and in order to show that the seven chosen approaches are indeed the most prominent ones. However, after the search was carried out and the number of search hits collected it became clear that there were large differences in the number of hits for various approaches (see e.g. the natural step).

¹⁰ When putting a term in quotation marks when using a search engine, it is assured that the term or sentence as a whole will be searched for exactly as it is written, instead of for example also showing results which relate to only one of the words that belong to the term.

¹¹ The colours were always calculated by the automatic function in Excel in relative comparison within each search engine

Moreover, judging from accumulated knowledge and experience in sustainability science the search result for some approaches actually seemed not to be representing their relevance entirely. This may be due to a number of reasons, such as terminology (various terms used for one approach) or a differing attention to an approach in management as opposed to scientific literature. In fact, this very exercise provided a good reflection of the state of diffuse and overwhelming information on sustainability approaches as discussed in the introduction. In the end it was decided to select seven approaches from the list based to some extent on the number of hits, but also on the personal opinion of the researchers. After all the mapping methodology that will be developed in section 4.3 aims to be applicable to all approaches that are available and even such that will still be developed. To give an example, Life-cycle management was left out as it is a very relevant approach mostly in its practical terms, but less with regards to the underlying ideology which the mapping aims to identify. The Natural Step, however, will be analysed as it has played a crucial role in particular in the early beginnings of the sustainable development movement. The seven approaches indicated in bold writing in the table that were chosen and will be discussed in the following are: Cleaner Production (CP), Corporate Social Responsibility (CSR), Cradle to Cradle (C2C), Eco-Efficiency (EE), Environmental Management Systems (EMS), The Natural Step (TNS) and the Triple Bottom Line (TBL).

4.2.1 Cleaner Production (CP)

Authors and year

The emergence of cleaner production (CP) can be seen to have taken place in the 1970s (Baas, 2005). At that time industry pollution control became a major concern and technological engineering solutions were developed (ibid.). In the 1980s, various international organisations as well as governments, and in particular the American Environmental Protection Agency (EPA), the Dutch government and Dutch universities, supported efforts of the development of environmental technology. Thereby these institutions took the technology of pollution control to a next level, which was termed clean technology (ibid.; Dieleman, 2007). In the 1980s and 1990s, many different authorities, industry and independent experts contributed to the development of the cleaner production concept (Baas, 2005). Eventually, the dissemination of the concept and thus its rising importance took place under the auspices of the United Nations Environmental Programme (UNEP) (Dieleman, 2007). In the academic world, the Journal of Cleaner Production that was founded in 1993 by Donald Huisingh has contributed to the evolution of the CP concept (Elsevier, 2013).

Core philosophy

UNEP is commonly credited with having provided the first definition of cleaner production (Hilson, 2003).

“CP is the continuous application of an integrated preventative environmental strategy to processes, products and services to increase efficiency and reduce risks to humans and the environment.” (Unido website, n.d.)

The CP approach rests on the concept of the four Rs: Reduce, Recycle, Reuse and Reformulate (Shah, n.d).

Short description

In the early stages of the CP concept development, it was often described as an environmental strategy that could substitute for traditional pollution control (Hilson, 2003). The programme puts a focus on developing countries by way of exhibiting great efforts to make technologies available „in

order to assist developing nations in leapfrogging from pollution to less pollution.” (Pauli, 2011). Today cleaner production is mostly seen as a sustainability approach that aims to reduce the environmental impact in processes and product development (Lozano 2012b, p.17: Glavič and Lukman, 2007; Pauli, 1997). This is being achieved through creating awareness (Fresner, 1998) for preventive strategies that focus on minimising harmful impacts to society and environment and on efficient resource use (Lozano 2012b) by detecting the sources of waste and emissions and through the definition of programmes that reduce and monitor these (Fresner, 1998). Cleaner Production is based on 4 guiding principles: the (1) precaution principle, (2) integration principle, (3) democratic principle and (4) the continuity principle¹² (Lei et al., n.d.). The main tools for CP are internal recycling, the substitution of harmful materials, a better education of and communication between employees and in particular material and energy flow management (Fresner, 1998) to facilitate modifications of products themselves as well as the production processes to reduce waste and emissions as far as possible (ibid.). Some authors extended the concept to include changes in the soft level such as company culture and organisational changes (Lozano 2012b: see Baumgartner and Zielowski, 2007; DeSimone and Popoff, 2000). Nevertheless, CP has a clear focus on the environmental sustainability dimension, while aiming to improve the financial situation as well (Lozano 2012b). The people dimension finds less regard within the CP concept (ibid.). The sustainability approach of ‘zero emissions’ is closely related to CP and Gunther Pauli, who introduced the concept of ‘zero emissions’, describes the goal of CP to be one of zero waste (ibid.).

Reflection/Criticism

The environmental focus of the cleaner production approach can lead to a lack of consideration of the role of the people within the CSS development. Moreover, the time dimension in CP is only implicitly mentioned, in form of a call for continuous CP strategies (ibid.).

4.2.2 Corporate Social Responsibility (CSR)

Authors and year

The first formal definition of CSR is attributed to Howard Bowen provided in his book “Social Responsibilities of the Businessman” in 1953 (Dahlsrud, 2008, p.2). However, an uncounted number of CSR definitions have been coined since then. Overviews are provided by e.g. Dahlsrud (2008) or Carroll (1999). It is thus difficult to attribute the CSR approach to sustainable development in companies to a specific selection of authors. According to a frequency count search in google performed by Dahlsrud (2008, p.7), the CSR definition of the European Commission is currently the one most frequently used, followed by the definition provided by the World Business Council for Sustainable Development (WBCSD).

Core philosophy

CSR is a way for businesses to contribute to sustainable economic development, while taking into account stakeholder concerns (WBCSD, 1999).

Short description

¹² (1) the precautionary principle stands for prevention; (2) the integration principle calls for adopting a “holistic view of the production cycle”; (3) the democratic principle requires the involvement of employees in the development; (4) the continuity principle, stands for a process without an end-point, which thus requires continuous improvements

The CSR definition of the European Commission reads

“A concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (2001).

The definition is one of the CSR definitions that do mention the economic, social and environmental dimension. However, in a majority of cases the latter is not seen as part of CSR (Dahlsrud, 2008). This is the case in the second most frequently used definition of CSR by the WBCSD, which states that CSR is

“the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life” (1999).

For this research purpose, the second definition will be considered the core philosophy of CSR and thus CSR with a focus on the social pillar will be representing this sustainability approach. This is meant to facilitate the categorization of this approach and is justified as it represents the majority of CSR understandings.

Reflection/criticism

CSR can be attested a bias towards economic and social concerns, with a certain disregard of the third sustainability dimension, the environment. CSR is a social construct, which is thus context-specific (Dahlsrud, 2008). There is, therefore, no global definition of CSR and it is a concept, which undergoes a continuous process of change and adaption. It is thus of importance to keep the restrictive focus of the mapped CSR approach in mind, in particular when a link to companies is constructed.

4.2.3 Cradle to Cradle (C2C)

Authors and year

The concept of Cradle to Cradle (C2C) emerged out of a cooperation between the American architect William McDonough and the German chemist Michael Braungart in the early 1990s (Chick, 1997, p.97). Based on design principles developed by McDonough and Braungart’s idea of an environmentally sound product life cycle, the three C2C principles ‘waste equals food’, ‘use current solar income’ and ‘respect diversity’, which later became ‘celebrate diversity’ (see e.g. McDonough et al., 2003), were developed (Chick, 1997, p.97).

Core philosophy

Out of this emerged an elaborate approach, which was published in the book ‘Cradle to Cradle – Remaking the Way We Make Things’. It calls for the transformation of human industry through ecologically intelligent design (Braungart & McDonough, 2009). This process is seen to take place in 5 steps:

- (1) Free of ... [specific substance]
- (2) Personal preferences
- (3) The passive positive list
- (4) The active positive list
- (5) Reinvention

(McDonough & Braungart, 2001a, 2001b, 2001c; Braungart et al., 2007)

Beginning with the elimination of undesired substances (step 1), eventually a list of desirable substances is to be created (step 4) in order to reinvent products to “optimally fulfil the need or

needs for which they are actually intended while simultaneously being supportive of ecological and social systems” (Braungart et al., 2007, p.1337)

Short description

The development of the Cradle to Cradle (C2C) concept takes the cradle-to-grave thinking on which LCAs are based one step further. It can be seen as a response to the dominance of the concept of eco-efficiency as a driving product and service development (Reay et al., 2011). Eco-efficiency in the eyes of cradle to cradle supporters aims only at making products ‘less bad’. The C2C philosophy, however, is based on the production of goods that are not just ‘not bad’ for the environment, but have in fact positive externalities (Braungart & McDonough, 2009). While LCAs commonly assume an end of the product life cycle, C2C, aims at reintroducing all used materials back into the technological or biological nutrients cycle (ibid.). Therefore, in the C2C perspective ‘waste equals food’ (MBDC, n.d.). Hereby, C2C puts a great emphasis on the abolishment of the usage of any hazardous substances (Eppinger 2011).

Reflection/criticism

A publication by the Dutch Ministry of Infrastructure and the Environment (2011) assessed the value of C2C in connection with LCAs and found that due to different value-based assumptions and the incorporation of a nutrient cycle in the C2C approach the two cannot be used in an integrated manner, but instead have to be applied separately. This is an important criticism as in practice many companies still see the two as very closely related. A study by Reay et al. (2011) studied the feasibility of C2C on a broad scale and found that the concept of ‘waste equals food’ can be contested based on the question where humanity would put all the created organic waste. Moreover, questions are raised regarding its radical propagation of ‘nature’ as ideal model on how human production should work.

4.2.4 Eco-Efficiency (EE)

Authors and year

According to Ehrenfeld (2005) the concept of eco-efficiency was first described by Schaltegger and Sturm (1989) and brought to broader public awareness in the subsequently published Schmidheiny’s *Changing Course* (1992). Von Weizsäcker (1995) built upon the concept of eco-efficiency in his book: ‘Factor Four: Doubling Wealth, Halving Resource Use’. The World Business Council for Sustainable Development contributed to the optimization and a clarified the definition of the concept (WBCSD, 2002).

Core philosophy

The core philosophy of eco-efficiency is to generate business profits by becoming more efficient in areas of environmental concern and thus increase the economic performance simultaneously (Etkins, 2005).

Short description

Eco-efficiency is one of the most commonly used approaches companies choose to become sustainable. However, this choice is often made unconsciously which can be explained with the deep integration of efficiency thinking in conventional business management. Most ‘quick-wins’ can be achieved by optimizing production processes, which - in most cases - also brings financial benefits. Being more energy efficient or using fewer materials for the production process while simultaneously

delivering a constant product quality provides at the same time a positive impact on the balance sheet (Aall & Husabø, 2010; Huppes & Ishikawa, 2005). Holliday et al. (2002) work out four main principles of eco-efficiency which are described as: (1) Dematerialization, (2) Circular economy thinking; (3) Servitization of products and (4) Product upgrades in order to add new functionalities.

Reflection/criticism

As simple and clear as the approach is, from a strong sustainability perspective, it does contain several drawbacks. Lozano (2012b) summarized the main points of criticism to the following four points. (1) Eco-efficiency is based on the standard economic theory model which also means that a certain abundance of resources is assumed and growth does not pose any problem. Therefore, if even all companies would become 'eco-efficient', the economic growth would lead to the exceeding of the planet's carrying capacity (Ehrenfeld, 2005). (2) Furthermore, the concept is criticized for its relativity¹³ or rebound effects which will eventually result in a worsened situation. If companies save energy in one process it can result in adding more energy consuming processes at other places (Korhonen, 2003). (3) Another major drawback of the approach is the lack of the social dimension, which however is compensated by the later developed concept of socio-efficiency. However, in order to account for the lack, an actor would need to take both concepts into consideration in order to embrace the environmental as well as the social dimension. Eco-efficiency as such does not do this (Ehrenfeld, 2005). However, a combined approach does not exist. (4) As several other approaches, also eco-efficiency is lacking the explicit consideration of the time dimension and is not always easy to be proven beneficial for the direct fostering of the financial performance. Benefits are more often to be found in the eco-innovation area which might result in a later stage in an improved economic performance (Korhonen, 2003). Especially, for the first and third point of criticism, the idea of eco-/socio-efficiency were developed further and turned into 'effectiveness' concepts in order to incorporate the notion of the 'limits to growth' into new approaches and thus shall not be seen as part of the general Eco-efficiency approach anymore.

4.2.5 Environmental Management Systems (EMS)

Authors and year

The origin of environmental management systems (EMS) can be seen as one of industry's self-regulation responses¹⁴ to the command-and-control instruments that were developed around the globe in industrialized countries in the 1970s to legislate environmental impact (Dieleman, 2007). A major international actor in the EMS field is the International Organisation for Standardization (ISO), founded in 1947. ISO created first working committees for the environmental field in 1971 and in 1987 the first quality management standard, which eventually became the ISO 9000 family (ISO Website, 2013). In the 1980s, notably also the inclusion of environmental risk in the due diligence¹⁵ approach in the US contributed to the emergence of EMS, as well as environmental protection developments in European countries, for example in the Netherlands, where the Dutch business

¹³ Relativity in this context can be seen as the problem of saving relatively more resources by the introduction of certain new technologies that however require other (maybe non-materialistic) resources that were not necessary before. A combination with LCC could thus be a solution.

¹⁴ Life-Cycle Assessments, Cleaner Production, Eco-design and several other concepts can also be seen to be a response to this legislative developments (Dieleman, 2007, p.80).

¹⁵ Due diligence refers to investigations and procedures that take place before a business transactions (Environmental Insurance and Risk Management Tools Glossary of Terms, 2013)

organisation VNO-NCW¹⁶ developed an 'intern gericht milieuzorgsystem', thus an internal EMS (Bremmers, 2006, p.97). In 1995, the European Union developed EMAS, which stands for Eco-Management and Audit Scheme (EMAS, 2012). In accordance with EMAS, the British Standards Institution (BSI) developed the Environmental Standard BS 7750 (Spedding, 2009), which was then superseded by the ISO standard 14001 with the intention of broadening the scope of the standard to an international level (Spedding, 2009).

Core philosophy

Environmental management systems represent standardized approaches or certifications that facilitate a comprehensive management of a company's influence on the environment. In many cases the systems encompass internal and external audits, which are meant to verify a company's compliance with and commitment to the environmental management.

Short description

As the name says, EMS aim to facilitate the management of environmental factors and impact. This often means making use of a formal system or database which organises the information on products and process within a company and their influence on environmental performance. The information is then used to report to stakeholders and the public (Melnyk et al., 2003).

The probably most prominent way of certification for companies in the field of environmental and quality management has emerged to become the ISO certifications (Dieleman, 2007; Sroufe & Curkovic, 2008). ISO has already published more than 19000 international standards (ISO website, 2012a). The motivation for its establishment has been "to facilitate the international coordination and unification of industrial standards" (ibid.). The most important standards for corporate sustainability are the ISO 9000 family and the ISO 14000 family concerned with environmental management. The standards "provide a model to follow when setting up and operating a management system" (ISO website, 2012b). They are thus useful for providing structure to a company that aims to integrate more environmental, social or quality concerns.

Reflection/criticism

The problem that arises with EMS is the freedom that they leave to the implementing company with regards to specifics, for example how to weigh environmental data (Ahlroth et al., 2011). While EMS provide a complete framework on guidelines on how to deal with environmental issues, in reality, their effectiveness has diminished, because many companies only use EMS to write down, organise information and to possess the certification (Takakusa, 2005, p.34). The effectiveness of an EMS is related to the motivation behind its implementation (for the case of ISO9001: Sroufe & Curcovix, 2008). Collecting sustainability information is certainly a first important step, but not sufficient for a corporate sustainability strategy if it is not followed up with action (Zobel, 2013) and more importantly exhibits no influence on the company's mind-set. Thus, using an EMS can provide a significant step towards CS if it is applied correctly and thoroughly.

¹⁶ VNO-NCW is a fusion of the Verbond van Nederlandse Ondernemingen and Nederlands Christelijk Werkgeversverbond

4.2.6 The Natural Step (TNS)

Authors and year

The Natural Step framework was developed by the Swedish oncologist Karl-Henrik Robèrt in the late 1989 and the approach was developed from then on together with scientific institutions in Sweden into the Natural Step not-for-profit organization (Burns, 1999).

Core philosophy

The core idea of the TNS (framework) is to redirect the attention of practitioners to the necessity of changing organizational structures as well as decision-making towards socio-economic sustainability with the support of a funnel metaphor and back-casting techniques which help to evolve towards an envisioned future scenario (Burns, 1999; Robèrt; 2000, Upham, 2000).

Short description

Besides its role as an international education organization, the Natural Step (TNS) is presented as a framework that guides public as well as corporate representatives towards socio-ecological sustainability. The main goal is to create awareness for thinking within cause-effect chains instead of tackling only the symptoms of sustainability problems. Central to the TNS is the concept of 'back-casting' which describes the idea that a desirable future should be envisioned and based on this, the following steps be made. Every action within the TNS should incorporate the four following sustainability principles (Robèrt, 2000; Skov, 2004):

1. End of extraction of substances from the earth's crust in a faster pace than they can be reproduced
2. End of production of substances by society in a faster rate than they can be broken down and integrated into the earth crust again
3. Degradation by physical means has to stop in order to stop the systematic diminishing of ecosystems
4. Conditions that systematically undermine people's capacity to meet their needs with the most efficient methods possible

This initial version was later optimized by Ny et al. (2006) in order to emphasize the importance of embracing the long-term challenges as well as economic considerations. This suggests that a combination of TNS with Life Cycle Management would be promising (ibid.). The most prominent corporations that claim to use the TNS are Interface, Collins Pine Company, Scandic Hotels and IKEA (Upham, 2000). With back-casting the time-dimension is included in the framework (Robèrt, 2000).

Reflection/criticism

Even though TNS can be seen as a promising framework for awareness creation as well as practical implications for organizations, its focus has a bias towards the environmental dimension and could have stronger linkages to societal needs. At least in the original version, the economic dimension is rather passively addressed. Furthermore, Upham (2000) has extensively analysed the framework's advantages and disadvantages. He showed that especially implicit reasoning, value judgements and the assumption of zero growth on a physical scale are rather undesirable characteristics.

4.2.7 Triple Bottom Line (TBL)

Authors and year

The triple bottom line (TBL) was developed by the Institute of Social and Ethical Accountability but also coined by John Elkington¹⁷ in his 1998 book “Cannibals with Forks: the Triple Bottom Line of 21st Century Business” (Jamali, 2006).

Core philosophy

At the centre of the TBL approach stands the idea of incorporating socially and environmentally responsible behaviour into business practices with the aim to align those in order to achieve also financial gains and an overall improved performance as well as value creation on all three pillars (Gimenez et al., 2012). The TBL framework should furthermore help to measure and report about sustainability against these three parameters (Jamali, 2006).

Short description

Several researchers have shown in the past that businesses are often surprised when their environmental management activities turn out to deliver financial rewards (Bansal, 2005) – an attitude that can still be encountered today. However, this is changing with the integration and acceptance of concepts such as the TBL into organisations. The underlying idea is to question the way companies carry out their actions with regard to sustainability principles and thus provide support for an optimized performance in all three pillars (people, planet, and profit). The TBL can be seen as a strategic tool that should help to bear in mind the necessity of value creation in all three levels during every decision making process and thus to instrumentalize and deeply embed this line of thinking into a company (Mowat, 2002, Jamali, 2006). According to Archel et al. (2008), the GRI is the best and most adequate reporting method that has fully incorporated the TBL principles. Companies are required to report on all three pillars in a thorough way.

Reflection/criticism

The main criticism of the concept, however, is that it is rather value-based and remains quite abstract and is thus difficult to implement into corporate routines. In addition to that there is not clear recommendation set with respect to how the three pillars of the TBL should be valued and balanced with each other (Lozano, 2012b). Archel et al. (2008) investigated in their study the practicability of the TBL for reporting purposes with a special regard to boundary setting and concluded that companies are still struggling significantly with setting proper reporting boundaries. Furthermore, they pointed out that reporting on the TBL ‘in accordance with the GRI’ might pose a danger in reputational loss if the GRI itself undergoes criticism which would thus be also reflected on the company itself. Lastly, the TBL does not explicitly address the time factor which makes it a contestable approach (Lozano, 2012b).

4.3 Axes development and mapping methodology (MoCSAs)

In order to assess/map the approaches as described in Chapter 4.2, a methodology (**M**apping **o**f **C**orporate **S**ustainability **A**pproaches) was developed. This methodology is intended to be able to map current as well as upcoming sustainability approaches that contain strategic characteristics. The selected characteristics can also serve to map the current situation and future intention of a

¹⁷ http://www.iisd.org/business/tools/principles_triple.asp

company. For sustainability tools the mapping methodology can probably not provide a complete picture. It can, however, still be used to improve understanding of the linkage of certain tools to certain approaches. In order to identify the core characteristics of those approaches, the following key questions were identified:

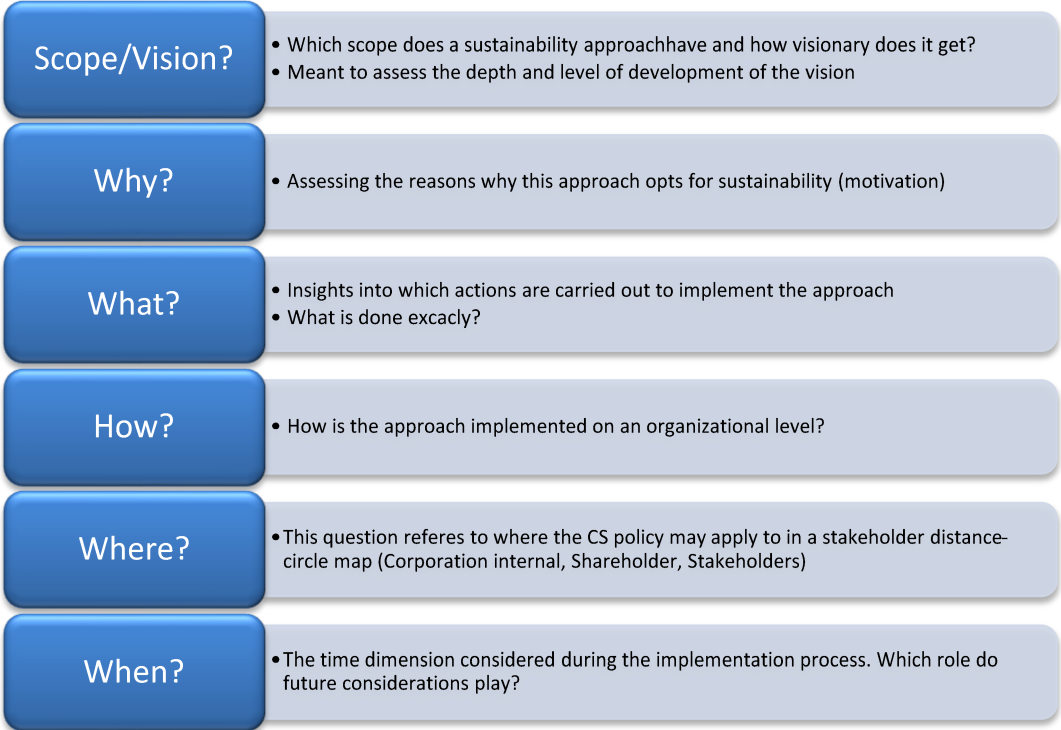


Figure 10 - Core aspects of characterizing approaches

By asking these questions, specific details about each approach can be identified. However, sometimes, the answer has to be found in-between the lines of the official description or even be left open. Specific sub-questions for each of the main questions will be provided in order to gain more detailed information about the characteristics of the approaches. The general goal is to carry out a qualitative mapping where the visualized answers provide even further insights into the approaches. Thus, an axes-based mapping model which is extended by an x- and y- axis serves this need the best. The following figure shows how this will look like:

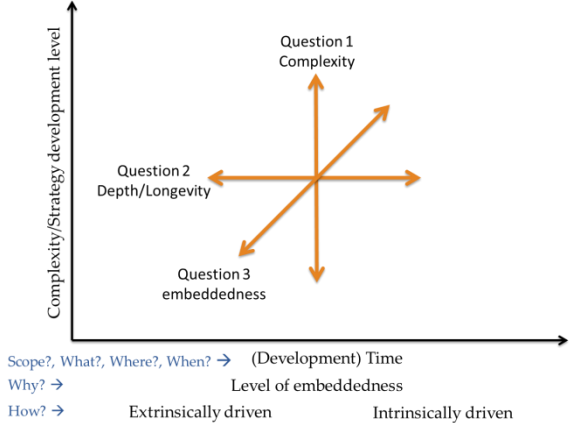
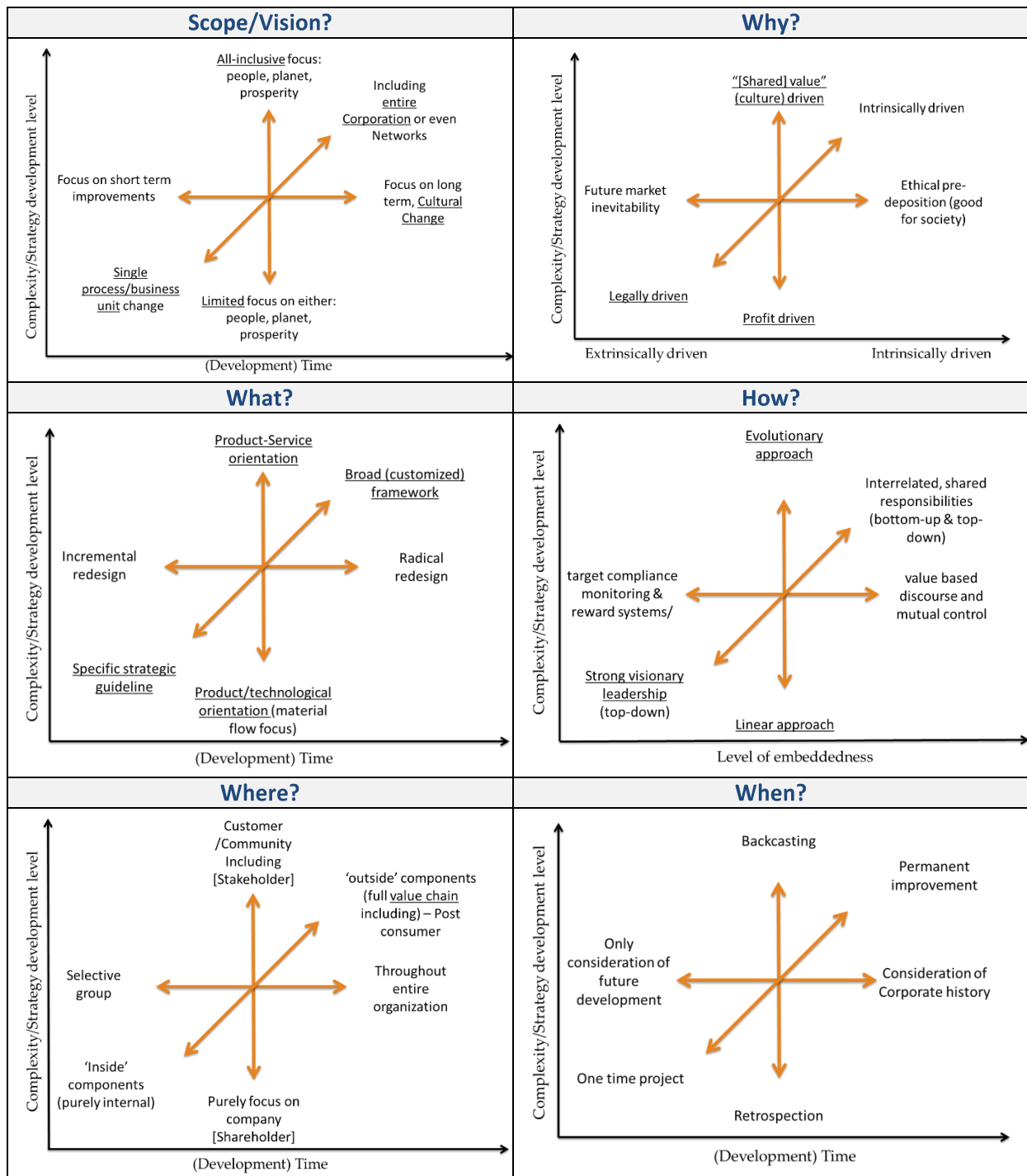


Figure 11 - Mapping methodology

On the x-axis adjustments for the “Why” and “How” questions had to be made in order to provide a logical structure. It should be stated clearly, that this mapping methodology is not of quantitative nature and it is also not supposed to be able to map an approach on specific places on the coordinate system. A decision has to be made between the answer pairs (1+2; 3+4; 5+6). Not in all cases it will be possible to decide clearly in favour of one of the answers and these axes will then be left empty in the map. The following figure will show all six question-systems.

Figure 12 - Overview about the six aspects and constructing sub-aspects as separate poles



Since some questions are rather self-explanatory but others are not, the following table will provide a more detailed description of the intention and content of each question. Each pair of grey and white lines can be seen as a question pair where only one answer (see explanation column) can be given.

Table 2 - Detailed explanation of each question

Dimension	Explanation	Question
Scope	All-inclusive focus: people, planet, prosperity	Are all three dimensions considered?
Scope	Limited focus on either: people, planet, prosperity	Are only one or two dimensions addressed? And even if all three are originally mentioned, does a bias towards one or two exist?
Scope	Focus on short term improvements	Is the main goal short term improvements?
Scope	Focus on long term, cultural change	Is long-term, cultural change intended?
Scope	Single process/business unit change	Is only one single process or business unit addressed to be 'changed'?
Scope	Including entire corporation or even networks	Is the entire corporation or even the corporate network addressed to be 'changed'?
Why	"[Shared] value" (culture) driven	Is the reason for application based on values?
Why	Profit driven	Are profit gains the main driver for the application?
Why	Future market inevitability	Has the approach been developed because of anticipated future market inevitability?
Why	Ethical pre-deposition (good for society)	Has the approach developed due to ethical reasoning?
Why	Legally driven	Did the approach originate due to legal obligations?
Why	Intrinsically driven	Did the approach originate due to intrinsic motivation?
What	Product-Service orientation	Does the approach incorporate or envision a development towards servitization?
What	Product/technological orientation (material flow focus)	Does the approach have a dominant focus on the product and production technology?
What	Incremental redesign	Does the approach require incremental redesign of processes?
What	Radical redesign	Does the approach require a radical redesign of processes?
What	Specific strategic guideline	Can the approach rather be seen as a specific strategic guideline?
What	Broad (customized) framework	Can the approach rather be seen as a broad customized framework which needs to be deeply embedded?
How	Circular/evolutionary approach	Is the approach meant to be continuously assessed and improved in a circular manner?
How	Linear approach	Is the approach seen as a linear process of implementation?
How	Target compliance monitoring & reward systems	Is the success of the approach controlled by monitoring and reward systems?
How	Value based discourse and mutual control	Is the success envisioned by value based discourse and mutual control?
How	Strong visionary leadership (top-down)	Is the approach intended to be initiated by strong (top-down) leadership styles?
How	Interrelated, shared responsibilities (bottom-up & top-down)	Is the approach intended to be initiated by shared responsibilities (bottom-up & top-down)?
Where	Customer /Community Including [Stakeholder]	Are customers and indirectly affected stakeholders considered in the approach?
Where	Purely focus on company [Shareholder]	Does the approach mainly aim at the shareholder and thus internal focus of a company?

Where	Selective group	Does only a selective group within the company benefit/is affected from/by the approach?
Where	Throughout entire organisation	Does the approach address a company wide application?
Where	'Inside' components (purely internal)	Are mainly internal processes considered by the approach?
Where	'Outside' components (full value chain including) – Post consumer	Is the entire value chain considered by the approach?
When	Back- casting	Is a future goal envisioned and the path to get there defined after the goal is set?
When	Retrospection	Is the starting point of the strategy development the current situation with consideration of available resources?
When	Only consideration of future development	Is the company history irrelevant for the approach?
When	Consideration of Corporate history	Is it intended to consider the company history for follow-up steps?
When	One time project	Is the application of the approach meant to be a one-time implementation?
When	Permanent improvement	Is the application of the approach meant to be permanently improved and adjusted?

4.4 Mapping of selected sustainability approaches

In order to be able to compare the seven selected approaches in an illustrative way, they have been visualized in the axes system in this chapter. Based on the sources analysed to describe the approaches in the previous part, the mapping was conducted. In most cases clear answers and thus positions on the axis were given. However, in some cases the authors of the selected sustainability approaches did not elaborate on specific questions from the mapping methodology and thus the mapping position had to be based on interpretations of the underlying philosophy and mind set of each approach. In order to make the line of argumentation clear for the reader, one example (Cradle to Cradle) for how the mapping was carried out will be explained in further detail. However, due to time and space limitations, only the mapping itself will be presented for the other six approaches.

Cradle 2 Cradle sample mapping

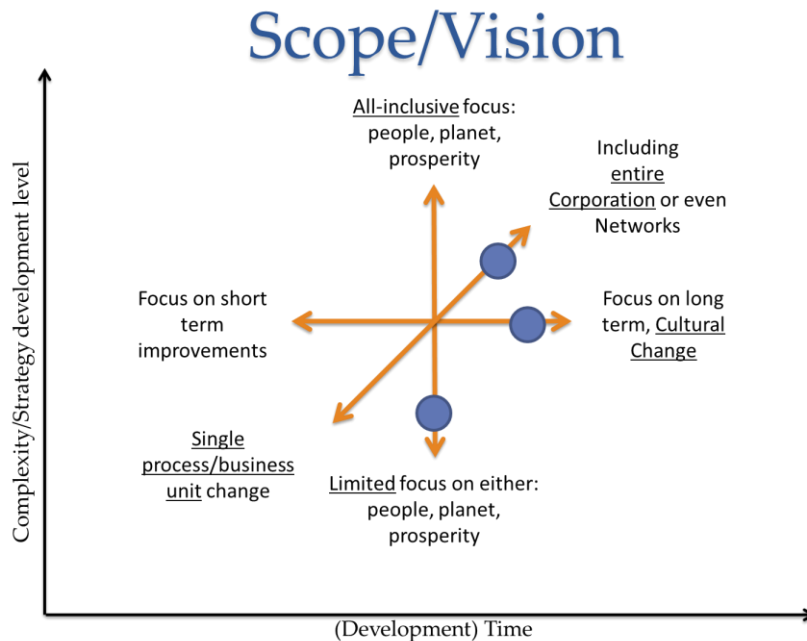


Figure 13 - Scope and Vision of C2C

Are all three dimensions considered OR are only one or two dimensions addressed? And even if all three are originally mentioned, does a bias towards one or two exist?

C2C has a strong focus on material characteristics and technical as well as biological nutrients and thus on the 'planet'. However, it is also clearly stated that the changes are meant to create financial gains. Also 'people' play a role in C2C, as for instance the whole purpose of using safe chemicals is also to protect public health. Moreover, work environment considerations can play a role in C2C approaches. In general, however, the people dimension is rather subordinated in the C2C thinking (Braungart & McDonough, 2009).

Is the main goal short term improvements OR is long-term, cultural change intended?

C2C is meant as a new industrial revolution; in fact it has been called an industrial evolution, which clearly entails the call for cultural change in the long-term (Braungart & McDonough, 2009).

Is only one single process or business unit addressed to be 'changed' OR is the entire corporation or even the corporate network addressed to be 'changed'?

C2C cannot, or at least should not be applied to only one isolated process within a company, as its underlying philosophy propagates the consideration of the whole supply chain (Braungart & McDonough, 2009).

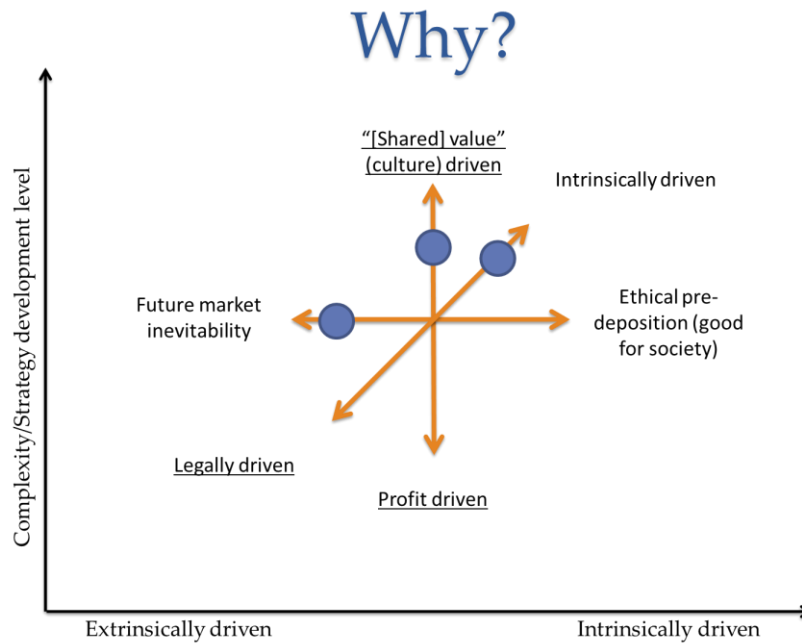


Figure 14 - Why does C2C promote sustainability?

Is the reason for application based on values OR are profit gains the main driver for the application?

This question cannot be answered in an 'either or way' since both aspects are fundamental drivers of the concept. C2C aims to come along with profit gains, however, the ideology is very much driven by the values and beliefs that stand behind the approach (Braungart & McDonough, 2009). Thus, it is rather a question that has to be answered by the applicants and is therefore context specific. In the analysed literature no clear motives that would justify the mapping for only one side of the questions were found.

Has the approach been developed because of anticipated future market inevitability OR has the approach developed due to ethical reasoning?

C2C is concerned with scarcity and wasting resources; with this concern the prospect of a future world that cannot shoulder its obligations anymore arises. It is hence proposed that it is crucial to reduce waste and create healthy products. A part of this reasoning is that all nutrients are supposed to remain within the system (Braungart & McDonough, 2009). Thus the reasoning is rather based on future requirements than on purely altruistic drivers.

Did the approach originate due to legal obligations OR did the approach originate due to intrinsic motivation?

By aiming to completely eliminate bad materials and creating a list of good materials, instead of just banning these which are considered toxic now (as e.g. according to REACH), C2C goes far beyond legal requirements and has a clearly intrinsically driven development (Braungart & McDonough, 2009).

What?

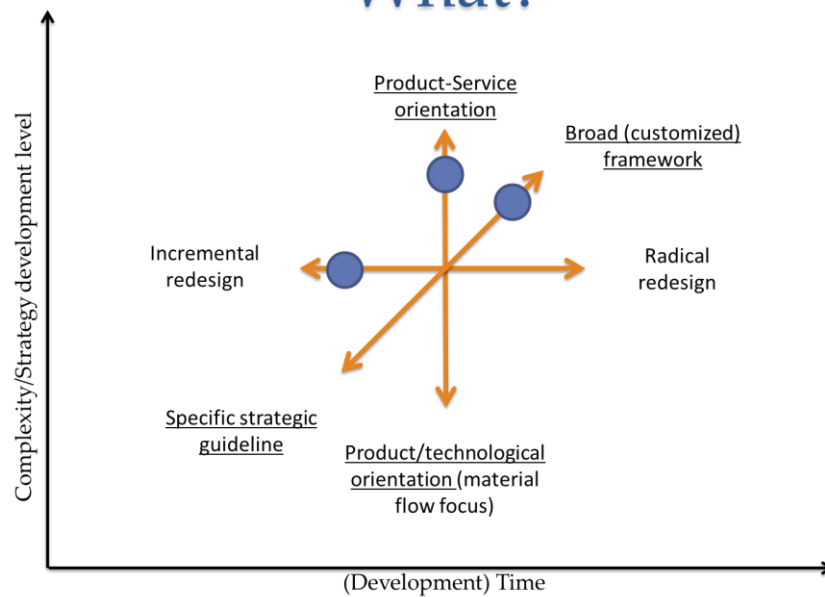


Figure 15 - What is being done when implementing C2C?

Does the approach incorporate or envision a development towards servitization¹⁸ OR does the approach have a dominant focus on the product and production technology?

One of the main characteristics of the C2C approach is the continuous use of materials within their nutrient cycles (Braungart & McDonough, 2009). This thinking requires take-back-policies and a close connection and communication with the customers. The orientation thus goes beyond the mere product.

Does the approach require incremental redesign of processes OR does the approach require a radical redesign of processes?

C2C's five steps as mentioned above start with incremental steps, but the aim is to actually in the end create a completely new product (McDonough & Braungart, 2001a, 2001b, 2001c; Braungart et al., 2007). The approach therefore calls for a disruptive redesign.

Can the approach rather be seen as a specific strategic guideline OR can the approach rather be seen as a broad customized framework which needs to be deeply embedded?

C2C is often used as a practical tool similar to an LCA (Reay et al., 2011), but the proponents of C2C actually want it to gain a deep embeddedness within the whole corporation and thus for it to be implemented on the strategic level.

¹⁸ Describes the tendency of on-going growth of the service component behind manufacturing and production processes. Former products are continuously altered in the direction of becoming services.

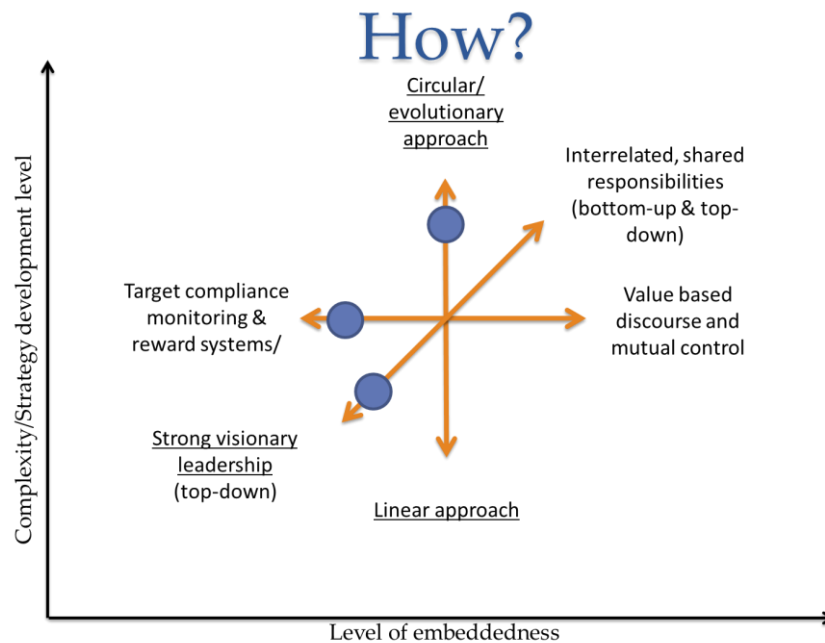


Figure 16 - How is C2C implemented on an organisational level?

Is the approach meant to be continuously assessed and improved in a circular manner OR is the approach seen as a linear process of implementation?

According to Braungart et al. (2007) the C2C philosophy of creating positive externalities is inherent to the approach. One might think in that case that once a product line is altered towards C2C principles, no further improvement in a circular manner would be necessary. However, since the ultimate goal is to move from efficiency gains to effectiveness gains, there is no limit to finding and applying new materials, processes etc. (e.g. with the help of the positive materials list) that provide an even more positive impact. Thus, when applying C2C to an organization, a continuous assessment of C2C products is desired.

Is the success of the approach controlled by monitoring and reward systems OR is the success envisioned by value-based discourse and mutual control?

C2C is an approach that has been made certifiable by its members and while it is also allowed to state ones ambition to produce according to C2C principles, the certification of C2C products by the C2C Products Innovation Institute (Cradle to Cradle Products Innovation Institute, 2011) represents a compliance, monitoring and reward system.

Is the approach intended to be initiated by strong (top-down) leadership styles OR is the approach intended to be initiated by shared responsibilities (bottom-up & top-down)?

Since C2C is clearly located in the production and design department of companies and since those departments fulfil core functions within a company, bottom up change of those processes is often unlikely. Fundamental changes within business processes are in most cases only possible if the top management agrees on them and sees the added value. Thus the approach is realistically meant to be initiated and implemented with a strong top-down structure. However, this does not mean that the middle management and the operational workers should not be informed or integrated in the process either. On the contrary, the more the entire organization understands and believes in the philosophy, the more motivated will every employee be to support the process as well (McDonough & Braungart, 2001a, 2001b, 2001c).

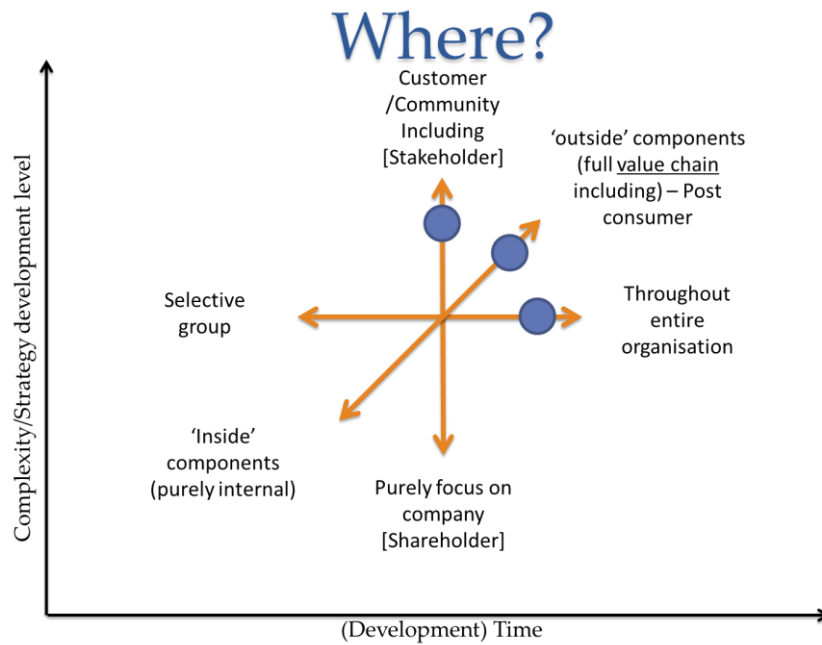


Figure 17 - Where is C2C being implemented?

Are customers and indirectly affected stakeholders considered in the approach OR does the approach mainly aim at the shareholder and thus internal focus of a company?

The role of customers in C2C is central, since the entire approach aims at a more circular economy mind-set where every participant has its role within the lifespan of a product. C2C products are often meant to be returned by the consumers to the place of purchase in order to guarantee a waste free recycling of the used materials. Puma for example has implemented an entire C2C collection which however still requires the customers to return the run out products to a Puma store.¹⁹

Does only a selective group within the company benefit/is affected from/by the approach OR does the approach address a company wide application?

Since C2C can be seen as an entirely new paradigm of production and thus entails a new business model as well, especially the underlying philosophy is meant to be applied to the entire organization (Braungart et al., 2007). Furthermore, it is not only the production department that has to be changed, but also the tacking-back logistics, the marketing department as well as the procurement. If C2C is applied holistically to an organization, the affects will range further than only the management level or a specific business unit.

Are mainly internal processes considered by the approach OR is the entire value chain considered by the approach?

One of the main intentions of C2C is to abolish environmentally harmful and toxic substances within products and the procurement of environmentally friendly products is of central importance. Furthermore, the after sales services of the value chain become more important as well since within many C2C product lines the final responsibility of returning the used product to the place of purchase lies in the hands of the consumers. Proper incentives for return thus have to be set. C2C can thus never be holistically applied to a company, if only internal processes are considered and improved well (McDonough & Braungart, 2001a, 2001b, 2001c).

¹⁹ <https://www.youtube.com/watch?v=H3Hso-ycdx8>

When?

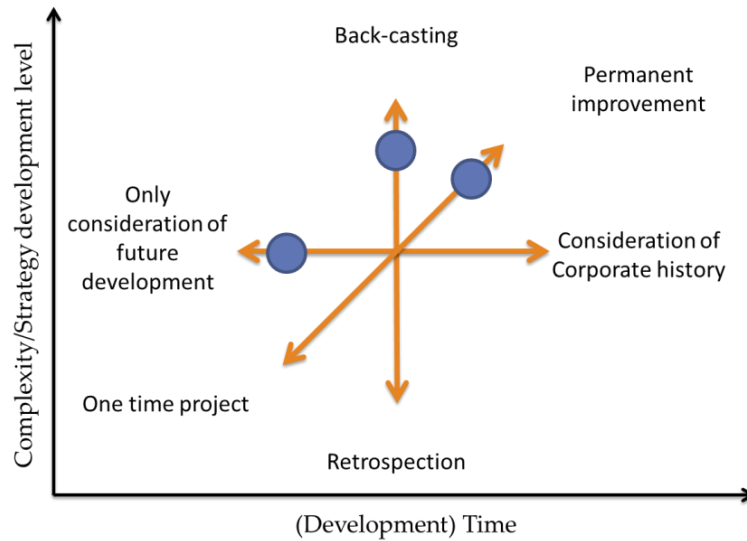


Figure 18 - What is the time dimension that is considered by C2C?

Is a future goal envisioned and the path to get there defined after the goal is set OR is the starting point of the strategy definition the current situation?

The future and thus ultimate goal of C2C products is to generate a positive impact on the planet with the produced products. Thus a clear target in the future is set and defined that an organization has to work towards. Even though Braungart & McDonough never use the term back-casting specifically, the used method is very similar to the concept of back-casting, as mentioned in the Natural Step Framework by Rob ert (2000).

Is the company history irrelevant for the approach? OR Is it intended to consider the company history for follow-up steps?

Since C2C will be an entirely new concept and line of thinking for most organizations, the history of a company is not of fundamental relevance. However, if companies have always been rather interested in creating a positive impact for society, the chances of successful implementation and application are significantly higher (Braungart et al., 2007).

Is the application of the approach meant to be a one-time implementation? OR Is the application of the approach meant to be permanently improved and adjusted?

C2C as such can only be applied one time to a product. However, this does not mean that the application as such should not be improved. On the contrary, continuous improvement, by the help of newer technologies and better material is of vital importance to foster the environmental performance of a product well (McDonough & Braungart, 2001a, 2001b, 2001c).

MAPPING OF ALL APPROACHES IN THE DEVELOPED METHODOLOGY

In the following part all approaches are mapped in a comparative way. The line of justification was the same one as in the previous part. Papers and original sources were assessed in order to justify

the positions on the axis scheme. The circles should not be confused with pie-charts (percentages) but rather symbolize which approach can be found on which side of each question.

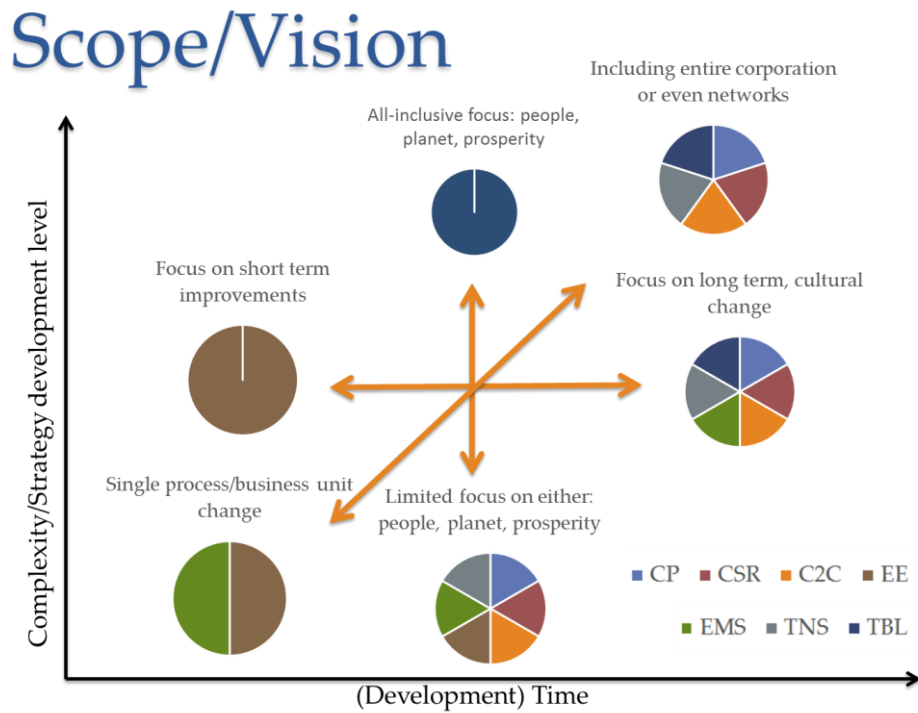


Figure 19 - Approaches mapping (Scope/Vision)

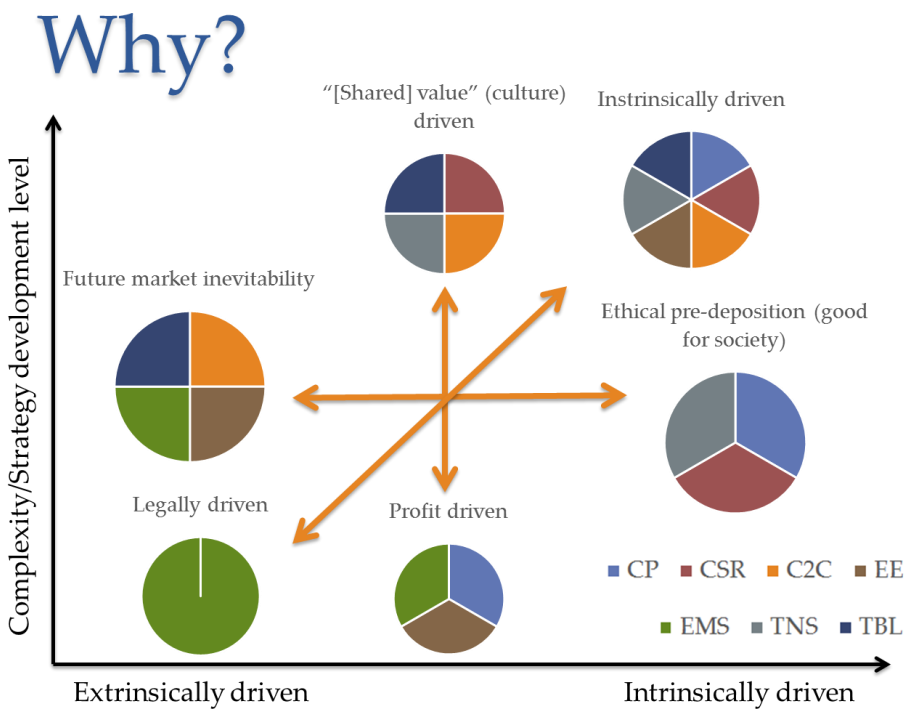


Figure 20 - Approaches mapping (Why)

What?

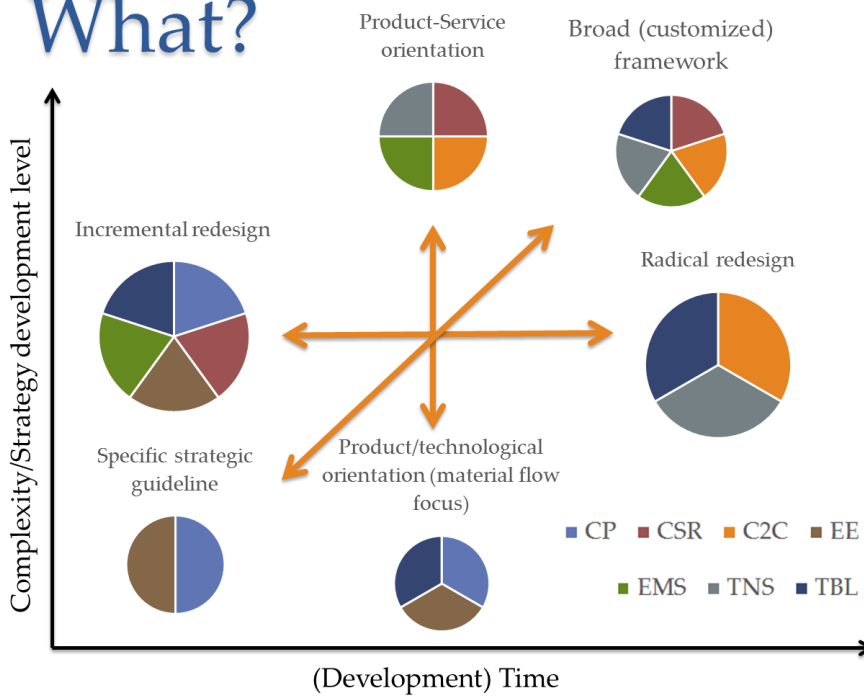


Figure 21 - Approaches mapping (What)

How?

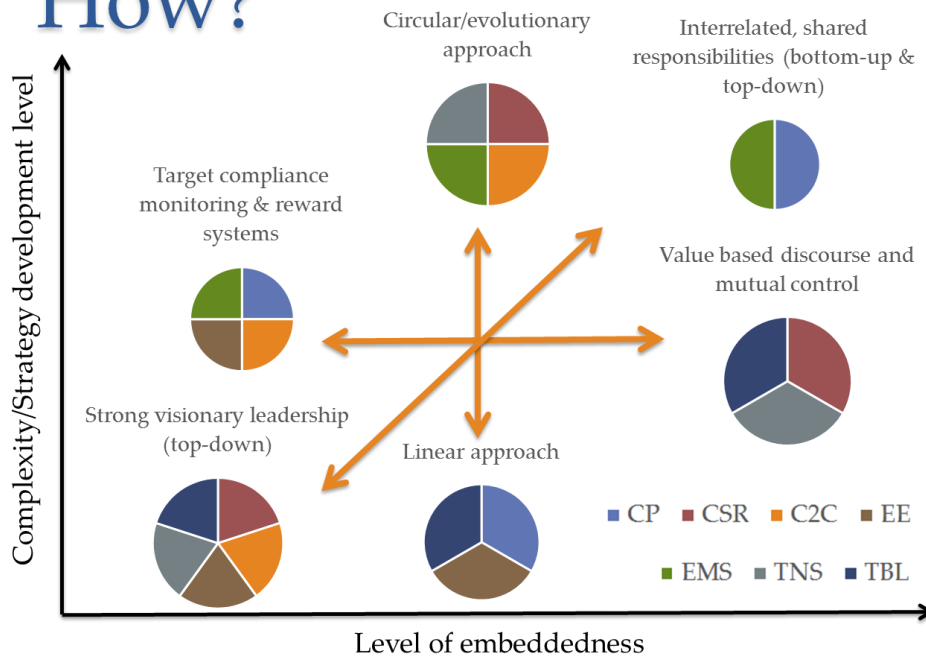


Figure 22 - Approaches mapping (How)

Where?

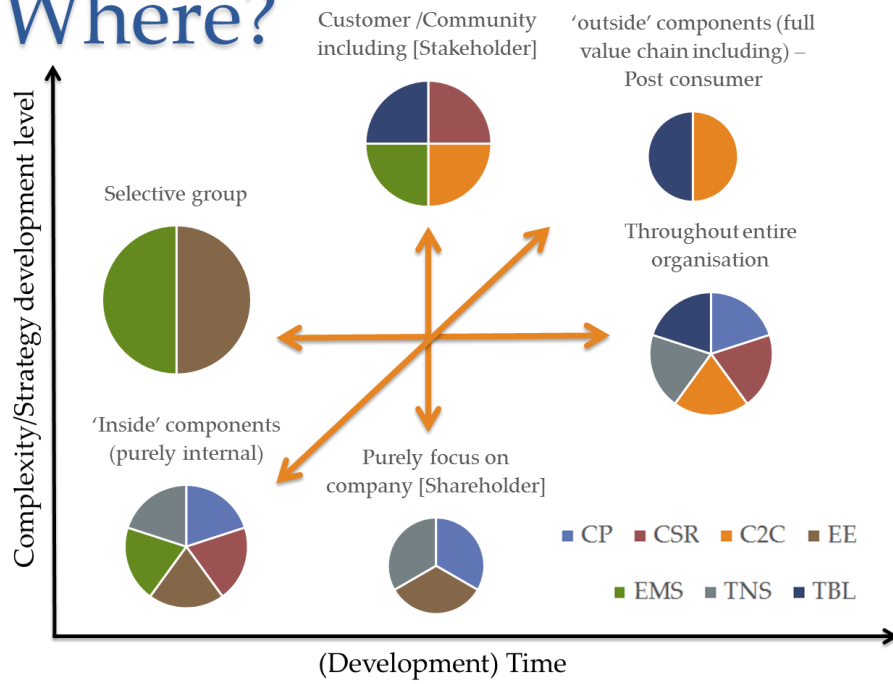


Figure 23 - Approaches mapping (Where)

When?

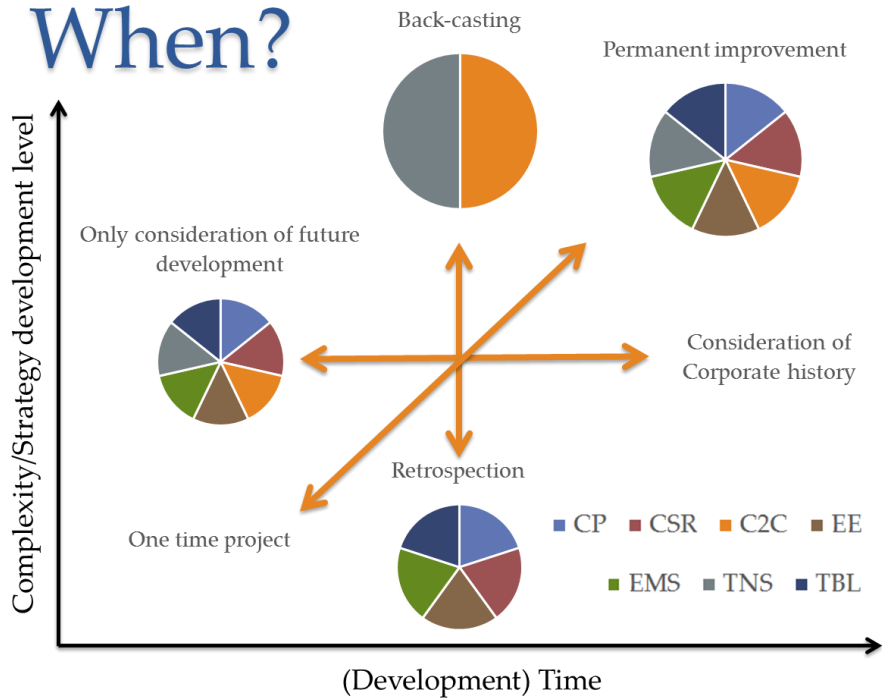


Figure 24 - Approaches mapping (When)

4.5 Practical implications and suggested application

The methodology, which was developed in the previous chapters, serves mainly to improve the assessment and comparison of current as well as future CS approaches. However, the acquired knowledge and insights can also serve practitioners significantly. In the following part, the practical implications of the research will be introduced and explained.

In the business world, companies often encounter difficulties to understand what the implementation of CS in their company could mean and even more importantly how it could be carried out (Waage et al., 2005). It is assumed that the underlying problems/challenges relate to the following:

- I. Uncertainty about practical meaning of corporate sustainability, its application and operationalization (Waage et al., 2005)
- II. Unawareness about available sustainability approaches
- III. No sound possibilities to compare sustainability approaches based on their underlying criteria and characteristics – support for the decision about which ones would fit the best to the company (culture)
- IV. Many approaches are often chosen unaware by companies and thus are not used to their full potential
- V. Step from strategy definition (approach selection) to concrete actions to take (tools) is often problematic for companies due to unawareness about suitable and available tools

The following figure will provide an overview about for which different purposes the axes mapping methodology can be used and will be explained in further detail in the text below.

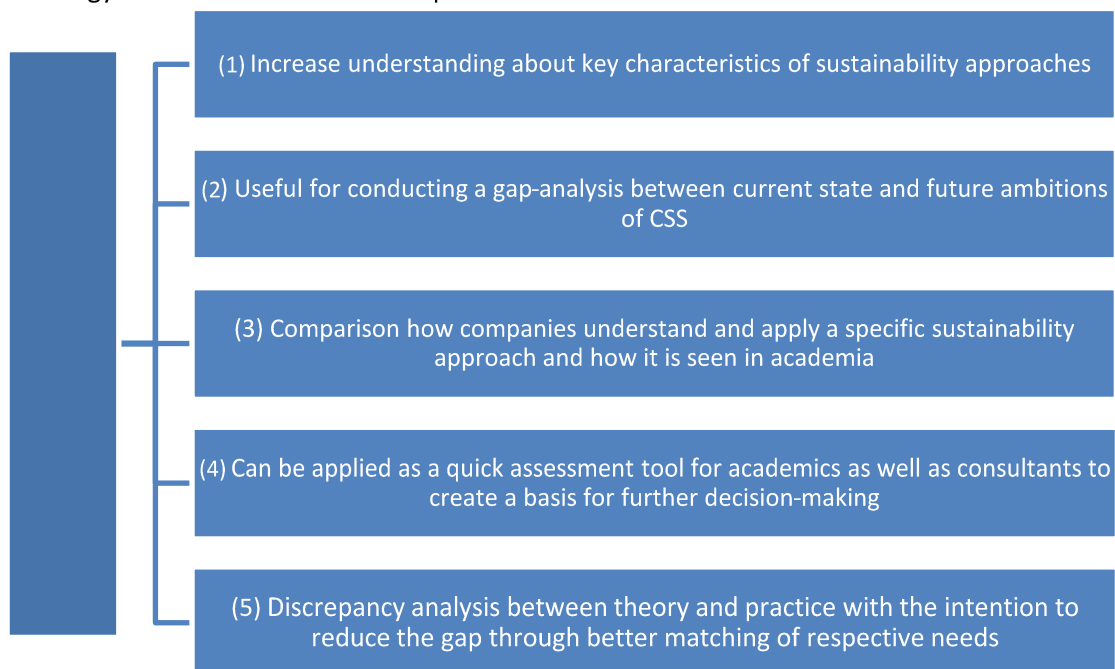


Figure 25 - Application possibilities of the developed axes mapping methodology

The mapping methodology that was developed provides a comparative overview of core characteristics of sustainability approaches for academics as well as practitioners. This knowledge can (1) **increase the general understanding** about available approaches, their characteristics and thus their suitability for specific business challenges. Moreover, in the same manner as approaches were mapped (2) a company can choose to map their very own sustainability approach, combined

with a mapping of both intentions and current state. As a result **specific gap-areas** between current state and intention can be identified and prioritized. (3) Moreover, if desired the mapping can be used to **compare the understanding** of how a company uses a specific sustainability approach with how it is understood in the academic environment. Based on this comparative and approach specific mapping, a company could investigate whether an approach is applied according to the academic expectations or not. Gaps could be analysed in a later stage and actions taken to eradicate the discrepancy. (4) The mapping methodology can also be used for researchers or consultants as a **quick assessment tool** that provides an overview about respective corporate sustainability strategies and their underlying characteristics. By interviewing companies all questions can be answered and a basis for further research or for the consulting process could be established. Lastly, (5) these comparative mappings could be of great value for academics since the **discrepancy analysis** could reveal differences between theory and practice based on which rather the approaches could be optimized or improved implementation guidelines for companies could be provided. Ultimately, it is thus intended to diminish the gap between theory and practice and provide a methodology with which these divergences could be identified in order to be eliminated in a later stage.

4.6 Limitations and further research fields

Limitations

As any methodology also MoCSAs comes with a number of limitations that need to be acknowledged. The mapping methodology is a **qualitative tool** and can thus **not provide for quantitative results** or even aggregation. This qualitative characteristic of MoCSAs has to do with the inherent normative character of approaches themselves as well as choices with regards to axis placements that have to be made. These also sometimes have to **rely on normative judgment** calls. In fact, they may not be easy to make at all, which may hamper the easy applicability of MoCSAs at times. Not in all cases sustainability approaches are coherently described; they are also evolving, changing and sometimes differently interpreted. It is thus sometimes **difficult** or even impossible **to find a consensual answer** that places an approach on one point on an axis, if a certain aspect has not been considered within the literature of a sustainability approach. Moreover, for approaches as well as companies goes that in some cases they might fulfil the conditions of two sides of one axis. Nevertheless, some of the limitations of MoCSAs may be overcome through future research.

Further research fields

Since the conducted research and especially the developed mapping methodology is a novel way in its kind further research has to be carried out in many fields. In the eyes of the authors, the most important research fields that open up are:

- Investigating the possibilities of adding a quantitative analysis to the methodology
- Case studies that carry out application option (1) and (2) of the application fields to see where it needs to be improved and clarified
- Academic research and application to test option (3), (4) and (5) of the possible application fields
- Mapping more approaches on the axes methodology in order to identify improvement areas
- Further research about the 'dimensions of sustainability' – how can they be assessed and used in a better way, supporting the approach choice of companies?

Research in these areas can help to improve the validity and feasibility of MoCSAs and thus the development to a useful and practical methodology that can help to improve company's sustainability understanding and performance in the long-term.

End of the common part, which was written together by Thomas Jankov and Sonja Koehler

5. How to change a Company's Culture?

CS does not just require a shift in the management system, but also a shift in company culture. But how to change a company's culture? To answer this question, at first it needs to be established what organisational or company culture is. The concept of organisational culture emerged in the 1970s and 1980s and has been defined in a variety of different ways since then (Linnenlücke & Griffiths, 2010). One of the most used definitions is Schein's (2004) model of organisational culture, which is presented in Figure 26 (ibid.).

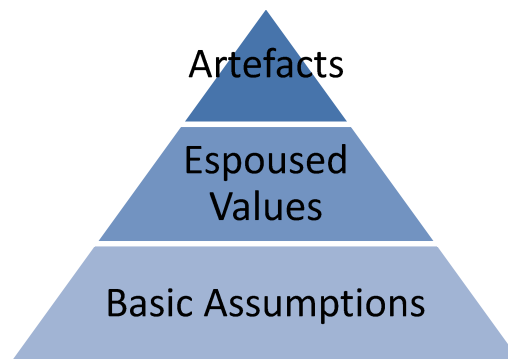


Figure 26 - Schein's model of organisational culture (Schein, 2004)

Artefacts describe things that are at the very surface of an organisation and thus visible to outsiders. This could be office arrangements, language, dress style etc. Values describe sets of beliefs, norms and operational rules of behaviour, which are shared by all members of the organisation and are difficult to change. It should be noted that these values might not be internalized and only propagate what is assumed socially desired behaviour, but are not acted upon (Baumgartner, 2007). Basic assumptions are the most difficult to change as they guide the thinking and perceptions of all members and make up the culture of the group (Schein, 2004). They represent an internalization of the values within the organisation due to a learning process (Baumgartner, 2007). These three value-levels thus make up the organisational culture that reflects commonly accepted behaviours and creates a sense of stability for all members of the organisation. It is important to be aware that "its elements are transferred by a process of socialization (telling stories, observing rituals,...) and are not learned consciously" (Baumgartner & Zielowski, 2007, p.1323).

Schein's model facilitates understanding and is transparent and can therefore be seen as a suitable model to uncover company cultures (Baumgartner, 2007, p.39). Overall, most researchers agree that the core topics of organisational culture are values, ideologies and beliefs and how these affect a company's culture and possibly management decisions (Linnenlücke & Griffiths, 2010). In fact, "organizational culture is often cited as the primary reason for the failure of implementing organizational change programs" (p.359). This is why it is of great relevance for the corporate

sustainability research. Organisational culture can in this regard be connected to companies' sustainability strategies. Zielowski & Baumgartner (2004) established that different types of sustainability strategies can serve different levels of Schein's organisational culture framework (as cited in Baumgartner, 2007). At the same token, failure to change company culture can be a reason why certain sustainability approaches or strategies are not successfully implemented.

Organisational change only takes place when people do not return to old ways after a certain amount of time, something which is known as 'initiative decay' or 'improvement evaporation effect' (Buchanan et al., 2005, pp.189-190). The research also emphasises that context or wider society may render the performance goals to be inadequate or non-applicable (ibid.). Organisational change hence needs to adapt and evolve under such circumstances, which is in line with CS management thinking that promotes an evolutionary process in CS management.

5.1 Change Management and Organisational Learning

Organisational culture provides the ground on which CSS are build and in which they need to be integrated. However, as Schein's model showed organisational culture consists of several variables and can be subject to change and in fact when implementing CSS a change of organisational culture may be inevitable. When organisational change is fostered, it is meant to lead to a more desirable organisational culture (Ragsdell, 2000 as cited in Lozano, 2012a). However, change is complex (Dawson, 1994 as cited in Lozano, 2012a) and thus requires good management. Moreover, in particular changes that are outside of the immediate zone of influence of a company, such as for example rising resource prices and the other issues addressed in the introduction, can lead to uncertainty and unforeseen circumstances, which reduces the window of opportunity to forestall them and often leads to reactive change management (Lozano, 2012a). 'Change' in itself cannot be managed, instead change management refers to managing the people and structures that are involved in and influenced by the change that is taking place (Moran & Brightman, 2001). A concise definition of change management by Moran and Brightman (2001) reads "change management is the process of continually renewing the organization's direction, structure, and capabilities to serve the ever-changing needs of the marketplace, customers and employees" (p.111). Nevertheless, there is little consensus among academics of what a change management framework should actually look like (By, 2005). For the purpose of this research in the following mainly publications about change management that are connected to CSS implementation will be considered. Change management principles are then applied in order to support change toward sustainability (Isaksson et al., 2010). The application of change management to corporate sustainability is justified as in the following:

"change management allows overcoming barriers of behaviour especially in situations when no direct needs for change are perceptible. This is often the case with problem fields of sustainable development such as climate change or other global problems that are emerging in the long run" (Isaksson et al., 2010, p.428).

When applying change management to corporate sustainability, the focus lies on crucial behavioural elements as well as barriers (Isaksson et al., 2010, p.428). CS implementation is a challenging process as it confronts people with a paradigm shift that influences the activities throughout the entire organisation. Due to this newly created reality "people cannot rely on existing routines to make sense of new ideas" (Van der Heijden et al., 2012, p.536).

This thought echoes systems thinking as described in section 3.4, which indeed is also proposed as a method to improve learning within an organisation through a better understanding of the system's mechanisms and feedback links (Hjorth & Bagheri, 2006).

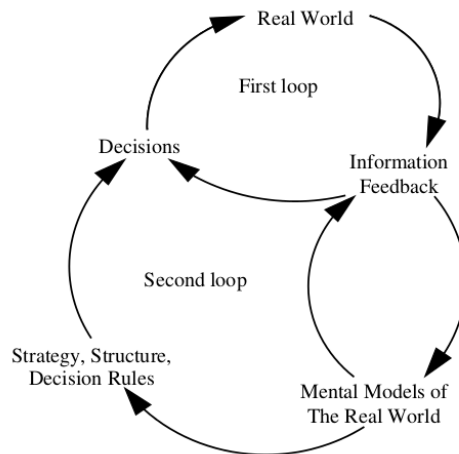


Figure 27 - Learning processes as described by systems thinking (Hjorth & Bagheri, 2006)

The figure illustrates that decisions that are taken within an organisation are influenced by information feedbacks from the real world (First loop) as well as strategies and decision rules which are formed by mental models (Second loop). This creates a system of continuous feedbacks, which enables to readjust decisions and allows for moving targets. An organisational learning process thus also requires flexibility.

Senge (2006) highlighted the role of individuals within a company who learn and thereby create the possibility for organisational learning to occur (p.129). Lozano describes the circles this creates fittingly: “organisational learning, through inter-personal and inter-group interactions, can facilitate group learning, and group learning in turn can facilitate individual learning, which facilitates group learning, which facilitates organisational learning” (2008). In order for organisational learning to occur employees must have an understanding of the organisation’s key features, its problems and how these could be resolved (Van der Heijden et al., 2012). This understanding has been termed sensemaking (Feldam, 1989, as cited in Van der Heijden et al., 2012). The presence of an organisational learning culture has increasingly been connected to the pursuit of corporate sustainability (Jamali, 2006). The concept of organisational learning describes very well the interconnected role of individuals, of groups and the organisation as an overarching structure for change management.

5.2 Sensemaking and the Change Agent

The concepts of organisational learning and sensemaking highlight an important element of change processes: that they are influenced by individuals and by interactions between individuals. Individual behaviour, for instance in the form of individualism that has become embedded within our modern societies, can lead to conflicts in company environments (Lozano, 2008) and to a thrive for maximum gains that may lead to favouring short-term gains and undervaluing long-term gains, of which the latter are vital for corporate sustainability (ibid.). Therefore, successful change management requires setting milestones, to ensure that individual short-term thinking will not lead to a deviation from the sustainability pathway (ibid.). The role of individuals within an organisation might thus hamper change processes.

While individuals may divert from the sustainability progress, they may, however, also play a driving factor in the form of change agents. The origin of the change agent concept is often attributed to the communication theory of the 50s where it describes the idea of opinion leaders

diffusing media messages (Holland, 2000). An important contribution was made by Rogers' book 'Diffusion of Innovations', first published in 1962. He describes change agent activity as a relationship between agent and client in which the agent successfully convinces the client of the need for change (Rogers, 1983). The change agent thus plays a marketing role here.

Change agents subsequently have also been described as product champions, hence with a focus on their role in supporting a particular product. In this context Chakrabarti (1974) takes on the definition of a product champion as by the Materials Advisory Board of the American, National Academy of Engineering, which states that a product champion is:

"an individual who is intensely interested and involved with the overall objectives and goals of the project and who plays a dominant role in many of the research-engineering interaction events through some of the stages, overcoming technical and organizational obstacles and pulling the effort through its final achievement by the sheer force of his will and energy."
(Materials Advisory Board, 1966 as cited in Chakrabarti, 1974)

This definition today is still valid. Change agents can in this sense take on the role of stimulator, initiator and legitimator. From his research on change agents Chakrabarti identified five criteria for change agents as described in the table below that increase the change agent's chance of success (1974).

Table 3 - Criteria for successful change agents (according to Chakrabarti, 1974)

Criteria	Explanation
Technical competence	A sound technical understanding of the product. In the case of a sustainability change agent this would relate to a sound understanding of the product lines the company has, as well as a clear competence in sustainability management.
Knowledge about the organisation	Needs a clear understanding about the company to identify relevant ideas, needs, resources and constraints.
Knowledge of the market	To ensure the product's success on the market.
Drive and aggressiveness	A new idea needs to be pushed and often a change agent might be confronted with adversaries.
Political astuteness	When championing a product and/or change processes an actor will always have to communicate with others, will have to know the power distribution and where and how to interfere.

The importance of these characteristics is demonstrated to the point, by the experience one of the change agents who was researched by Chakrabarti describes:

To be a product champion, one has to be a very aggressive and competent person. He must not only understand the technology, but also its uses. The job of the champion is that of an odd ball. Everybody looks at you with suspicion. The first problem you would face is that of isolation and communication. You would soon find that you cannot communicate with people around you. The reasons are threefold:

(a) If it is a large project, they may not like it and would be suspicious of the results. Secondly, they may not be able to appreciate your activities.

(b) If it is a small project, it will be *peanuts* to them. In most cases, the new technology-based projects are *peanuts* to the people in large companies. Who would waste time on *peanuts*?

(c) You soon find that you have become an *egomaniac*, always educating and criticizing people around you, because your role as the champion is to explain and expand on the problems. The people who can really appreciate your problems and with whom you can meaningfully talk, are not the people in your own organization, but your counterparts in your competitor's organization.

Figure 28 - Excerpt from Chakrabarti's 1974 article 'The Role of Champion in Product Innovation'

Furthermore, change agents can play a great role in sensemaking process as they influence the people around them through the articulation of their ideas (Caldwell, 2003 and Lawrence et al., 2006, as cited in van der Heijden et al., 2012). Whether intended or not change agents can exhibit the greatest influence by translating and embedding the understanding and emerging company strategy of CS (Van der Heijden et al., 2012). These social interaction processes involve communication, acting and building organisational relationships (ibid.).

The role of both key actors that are opposed to change and change agents is important because individualistic mental models become an integral part of a group culture as individuals shape the company culture around them and at the same time the group influences the individual's beliefs (Lozano, 2008). Organisational learning theory shows that in order to achieve changes in mental models informational, emotional and behavioural attitudes of individuals, groups and the organisations as such have to be congruent (ibid.). Informational, emotional and behavioural attitudes in the context of sustainability can be described as "to know what sustainability refers to, to think in sustainable ways, [and] to act in sustainable ways" (p.506). This provides the very basis on which corporate sustainability can be build.

5.3 Supporting Conditions for and Obstacles to Change

Joining 'knowledge on what should be done' with 'knowledge on how it should be done'

The previous section identified change in company values and basic assumptions (Schein), change in mental models - through changes in informational, emotional and behavioural attitudes- , organisational learning, change agents and their ability of 'sensemaking' as supporting conditions for a change process to take place. Many more factors have already been identified in the literature to be supporting organisational change towards CS. Lozano summarizes relevant findings regarding the requirements for a long-lasting CS change (2012a²⁰). The research found for instance that the sustainability vision that a company develops can work towards or deviate from success. It is crucial for success that the vision is in line with the plans for its operationalization (Doppelt, 2003; Hodge et al. 1999; Robèrt et al., 2000). The best vision is of no use, when organisational structure and the management experience no incremental changes (Diesendorf, 2000 & Doppelt, 2003). In line with this, Griffiths & Petrick establish that current corporate cultures cut off the organisational system from the environmental information and that internal structural changes such as the implementation of environmental quality management systems are important to enabling an organisation to break free from the culture and routines that protect the state quo that is gathered (2001). Stone (2006) added that top-level management commitment is crucial to a successful CS implementation and that a change agent can play an important role in the persuasion process.

Due to the great number of supporting conditions for change that have been identified these will be listed (and explained where necessary) in Table 4 below. While not all literature on organisational change and change management could be considered, literature reviews, such as e.g. by Buchanan et al. (2005) and Lozano (2012a), who summarize results from other studies, could account for the inclusion for a great amount of research. Whereas the former treats organisational change in general, the latter focuses on organisational change in CS implementation. The table that was generated makes no statement as regards a ranking of the different supporting conditions according to their usefulness.

Moreover, a column was added to the table that sheds light on the connection between conditions supporting organisational change and CS approaches. The latter are closely linked to change management theory as they commonly represent attempts to initiate a change in organizational culture and in particular towards corporate sustainability. The approaches theory says a lot about what should be done, but less about how things should be done. This research, however, inquires how the different sustainability approaches, as provided by theory, connect to business reality. In practice, many obstacles are encountered in CS implementation and recent research indicates that a failure to change organisational culture might be one of the key problems (Lozano, 2012a). This thus indicates that there is a discrepancy between theory and practice. The combination of sustainability approach mapping and the theory on organisational change management can therefore help to reveal more about how things are done and should be done and why sustainability approaches are not clearly reflected in the business reality. Therefore, a column was added to the table illustrate how the 'supporting conditions for change' is linked to the CS approaches, through the help of the mapping methodology. Some criteria may be linked to various different approach elements, whereas in other cases there is no clear linkage.

²⁰ Lozano's (2012a) obstacles are based on Rosner (1995), Clarke and Roome (1999), DeSimone and Popoff (2000), Frankental (2001), Doppelt (2003), Langer and Schön (2003), Lozano (2006)

Table 4 - Supporting conditions for organisational change towards CS. corporate sustainability

	Supporting condition for change	Sources ²¹	Link to CS approaches map
Company culture factors	Change in mental models ²² through informational, emotional and behavioural attitudes	Lozano (2012a); Lozano (2008)	Why? – shared values
	Organisational learning	Senge (2006); Jamali (2006)	
	A secure base: Creating a secure base (consistent set of values); and in which people feel free to explore opportunities	Harle (2007)	Where? – Throughout entire organisation
	Vision: Development of long-term visions and concrete proposals of how to achieve change (milestones); Consistency from strategic vision to day-to-day behaviour	Baumgartner (2009); Lozano (2012a); Harle (2007)	Scope/Vision? – focus on long-term cultural change
	Systemic/systems thinking	Senge et al. (1999) ^a ; Lozano (2012a)	How? – Evolutionary approach
	Individual characteristics factors	Change agents: Support of the chief executive officer; committed individuals; sensemaking	Chakrabarti (1974); Van der Heijden et al. (2012); Baumgartner (2007); Holton et al. (2010); Stone (2006); Rimmer et al. (1996) ^a ; Buchanan et al. (2005); Lozano (2012a)
Stakeholder inclusion in seeking best practices		Rimmer et al. (1996) ^a	Where? - Stakeholder
Training/coaching that serves individual and organisational needs		Dale et al. (1999) ^a ; Lozano (2012a)	
Employees: Effective teamwork; The ability to generate and utilize employee knowledge		Dale et al. (1999) ^a ; Griffiths & Petrick (2001, p.1581)	Where? – Entire organisation
Managerial factors		Management credibility	Buchanan et al. (2005)
	Confidence in abilities of top management	Buchanan et al. (2005); Dale et al., (1999) ^a	

²¹ Sources that are marked with an ^a are used as cited in Buchanan et al. (2005).

²² “Mental models are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action.” (Senge, 2006, p.8)

	Fit of strategy with managerial values	Rimmer et al. (1996) ^a	Why? – Shared values
	Clear responsibilities for change management	Dale et al. (1999) ^a	How? – Shared responsibilities
	Being comfortably out of control: dealing with uncertainty	Harle (2007)	When? – Back-casting
	Always change a winning team : Leaders need to build teams with relevant diversity for each phase	Harle (2007)	
Institutionalization factors	Institutionalization of change	e.g. Jacobs (2002) ^a ; Pettigrew (1985)	When? – Permanent improvement
	Fit with internal power distribution and power of key stakeholders	Rimmer et al., (1996) ^a	
	Organisational structures: The actual creation of organisational structures that “are capable of capturing, processing and making sense of environmental information”; An approach in place to apply tools and make them part of company routine; Incremental changes in organisational structure and management experience	Griffiths & Petrick (2001, p.1581); Dale et al. (1999) ^a ; Lozano (2012a)	
	Information: Best practice examples and local activities; Information about the reason, subject and consequences of change is available; can enter and diffuse through the organisation.	Lozano (2012a); Isaksson et al., (2010); Griffiths & Petrick (2001, p.1581)	
	Effective quality management system; adequate improvement infrastructure; procedures in place to counteract arising problems	Dale et al. (1999) ^a	How? – target compliance, monitoring
Situational Factors	Change is perceived as central to organisational performance	Dawson (1994) ^a	Why? – Intrinsically driven
	Fit with competitive strategy	Rimmer et al. (1996) ^a	Why? – e.g. profit driven
	Development in line with popular opinion in society	Rimmer et al., (1996) ^a	

The following table shows obstacles to change towards corporate sustainability that have been identified in the literature, in the same manner as in the previous table.

Table 5 - Obstacles to CS change

	Obstacle to change	Source ²³	Link to CS approaches map ²⁴
Company culture factors	Failure to ‘anchor’ cultural change: If pressure for change is removed and the new values and social norms are not yet anchored in the company culture, change is likely to be lost or even reversed.	Kotter (1995) ^a	Vision/Scope – Focus on long-term cultural change*
	Undervaluing long-term investments in human resources	Rimmer (1996) ^a	Why? – Ethical predisposition* and profit driven
	Denial about operations’ effects to the environment and societies	Lozano (2012a)	Why? – Ethical predisposition*
	Linear thinking	Lozano (2012a)	How? – Linear approach
	Getting to the real problems after having “picked all the low hanging fruits”	Senge et al. (1999) ^a	When? – One time project
	Declaring victory to soon	Kotter (1995) ^a	When? – One time project
Individual Characteristics factors	Lack of awareness about informational, behavioural and organisational barriers on both group and individual level	Lozano (2012a)	e.g. Vision/scope – Limited focus or Where? – selective group
	Unwillingness to change	Lozano (2012a)	
	Fear and anxiety: Fear/despair about required changes and how to deal with them	Senge and Kaeufer, (2000) ^a ; Lozano (2012a)	
	Extra work added to day to day activities	Lozano (2012a)	
	Reaching the limit of management commitment; Indifference of senior managers	Senge et al. (1999) ^a ; Reisner (2002) ^a	Vision/scope – focus on short term improvements and How? – Strong visionary leadership*

²³ Sources that are marked with an ^a are used as cited in Buchanan et al. (2005); Lozano’s (2012a) obstacles are based on Rosner (1995), Clarke and Roome (1999), DeSimone and Popoff (2000), Frankental (2001), Doppelt (2003), Langer and Schön (2003), Lozano (2006)

²⁴ In the case of change obstacles, those are in many cases related to a “lack of” specific CS approach elements. This will be indicated with a * behind the entry. Furthermore if an “e.g.” is mentioned before the entry this means that the obstacle can be connected to an approach element in some cases, but may also have different origins in reality (for example a lack of awareness could be connected to a limited focus of the CS vision, but may however have many more and very complex reasons).

	Reaching ' undiscussable ' issues that might lead to conflict	Senge et al. (1999) ^a	Why? – Shared value*
	Tackling symptoms and not problems	Senge et al. (1999) ^a	What? – Practical tool and When? – one time project
Institutionalization factors	Certain architectural design features of organisations (commonly associated with traditional corporations) <ul style="list-style-type: none"> ○ Hierarchical organisations ○ Centralized command and control style of management ○ Reactive approaches to ecological and human sustainability issues 	Griffiths and Petrick (2001)	How? – Shared responsibilities*
	Inability to steer funding	Reisner (2002) ^a ; Popa (2012)	Scope/Vision – Limited focus; Why? – ethical predisposition
	Inadequate attention to any combination of the organization characteristics , intervention characteristics or institutionalisation processes	Jacobs (2002) ^a	Scope/vision – single business unit or When? – consideration of corporate history*

By linking the supporting conditions for and obstacles to change that were identified to the MoCSAs scheme, it became clear that the theoretical fields overlap in many cases but have no linear relationship and are not mutually exclusive. Some supporting conditions or obstacles cannot be connected to any axis and the other way around. A usage of both theories in connection and apart is thus assumed to improve the detail and amount of findings of the challenges and possibilities of a CS implementation process.

5.4 Organisational Change in the CS management System

This research follows the hypothesis that both, change management as well as a thorough CS approach and understanding thereof, are needed for an integrated CS management system. The following figure integrates supporting conditions of change within a CS management system as introduced in section 3.3.

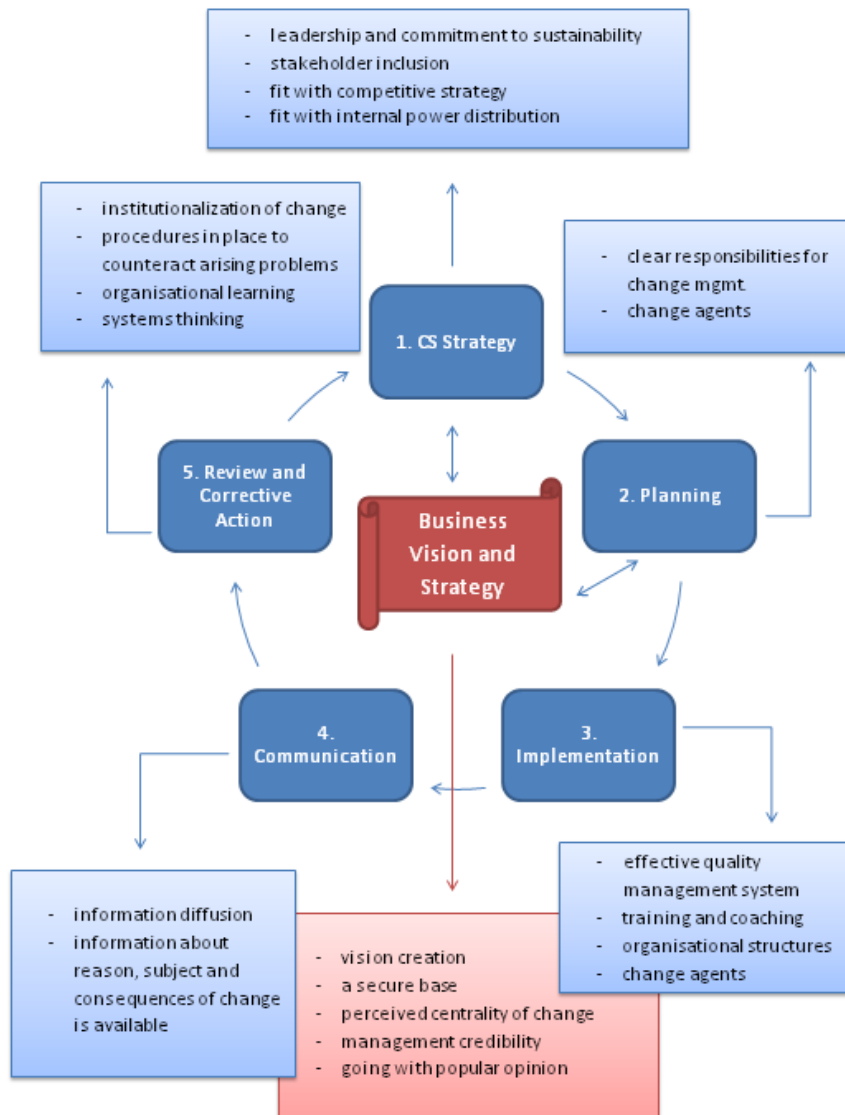


Figure 29 - Supporting conditions for organisational change integrated into Azapagic's CSMS

Through this integration a better understanding of the connection between CS management and change management can be derived and it becomes clear that the supporting conditions for change can be allocated to different phases of the CS implementation process. This allocation should not be considered as exclusively, but indicate a priority. A similar allocation was made for obstacles to change (see Figure 30).

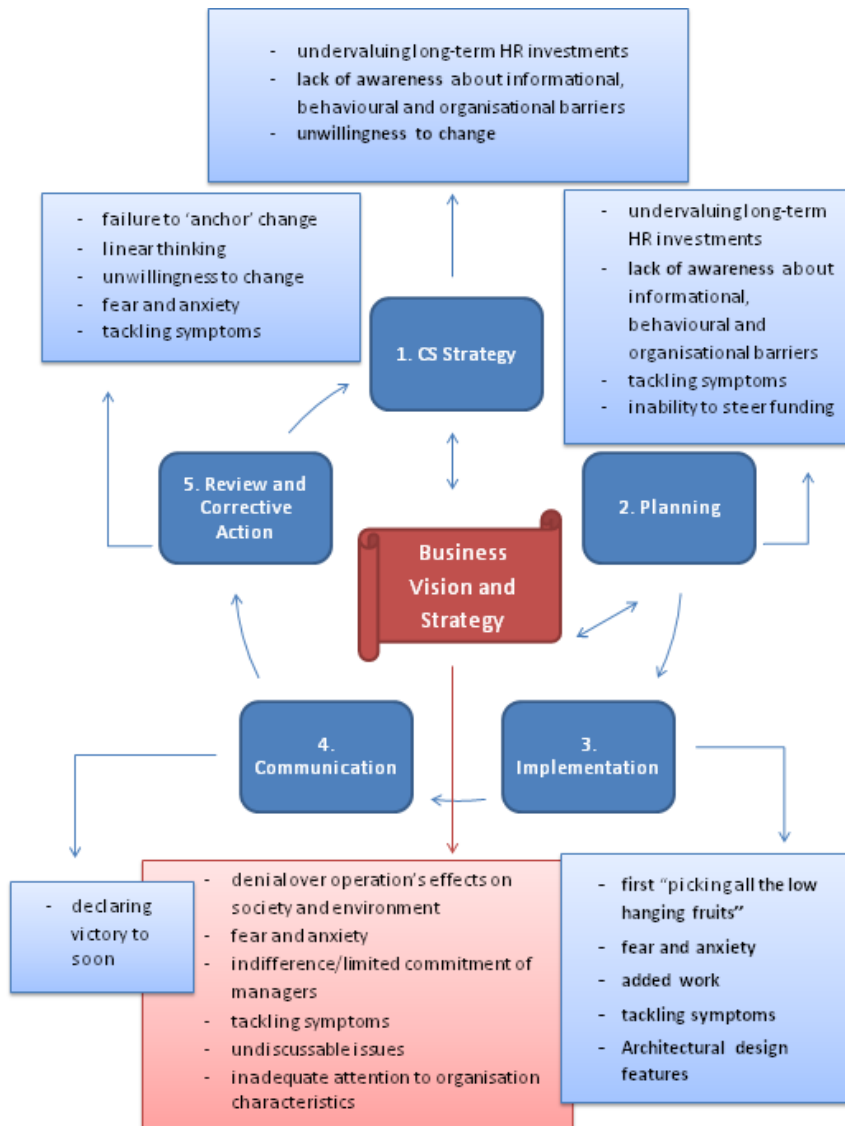


Figure 30 - Obstacles to organisational change integrated into Azapagic's CSMS

5.5 Organisational Change Processes in Small-Medium Enterprises

Organisational change management is not limited to a specific type of firm, nor are sustainability approaches or CS management systems. The focus in theory on CS implementation, however, has been on large enterprises (Jenkins, 2006) and therefore it is important to highlight differing characteristics of SMEs. The following section will thereby provide for background knowledge to improve the understanding about relevant contextual factors for CS implementing SMEs. According to the European Commission, SMEs have up to 250 employees, of which those with less than 10 employees are micro companies, those with less than 50 are small companies and those above are medium-sized companies (2003). SMEs are, however, not always categorized in the same way, which complicates research result comparisons (see e.g. Jenkins, 2006). The notion of an SME has become more complex “suggesting a fragmented, far from homogenous sector operating in numerous economic spheres, in a dispersed supply chain, with differing managerial styles and ownership structures” (, p.243). Nevertheless, Jenkins (2006) identified a number of characteristics that apply to SMEs. (1) SMEs are often owner-managed, which results in a personalised style of management; they

are, however, (2) more difficult to regulate as opposed to larger firms as they are for instance slower in taking on voluntary regulation, distrust bureaucracy and are less subjected to institutional pressures, such as competitor benchmarking or public and private interest groups; at the same time SMEs (3) can often be more adaptive. Whereas large companies handle CS implementation usually formally and strategically it can be expected that smaller companies might use a much more personalized informal approach (ibid.). Overall, usually the main motivations to implement CSS at SMEs lay in internal drivers not external pressures (p.249). A study on Italian SMEs (Del Baldo, 2012), in coherence with this found that internal change agents, in particular in owner-manager situations, and their values were success factors for sustainability implementation.

Despite the importance of SMEs to the economy and simultaneously their impact on the environment, e.g. in form of emissions, CS approaches have mainly been developed for large companies (Jenkins, 2006). Interestingly, at the same time SMEs have been attested a “poor use of CSR instruments” (Graafland et al., 2003, as cited in Popa, 2012, p.154). The poor use of CSR instruments may thus expose a link to a lack of understanding about CS approaches. A study by Fassin et al. (2011) indicates such a connection. They detect that the usage of terms such as business ethics, CSR, sustainability and other related terms by SME owners/managers seems to be rather pragmatic and shows itself in implicit CSR actions (p.441). Among SME owners and managers²⁵ the understanding of these terms seems to be rather converging, whereas within the academic and researchers world many different definitions and usages of these terms have been established and applied (p.443). This may indicate that business owners do mainly make sense of such terms based on other information channels than academia (ibid.) - a finding which was supported by Jenkins (2006) - and thus refrain from making use of specific CS approaches and resulting in poor use of CSR instruments. Jenkins’s case studies even found that “companies did not commonly use the term CSR in-house to describe their activities, usually defining it informally and breaking it down to its component parts such as environmental management, community involvement, work-life balance” (p.246).

Jenkin’s research (2006) identified a number of other key challenges to CS implementation as identified by SMEs: time, resource constraints, getting employees involved, embedding a CSR culture, quantifying benefits, connecting to community, lack of information and support, maintaining the momentum of activities. Interestingly companies with more employees were less likely to be discouraged by these challenges (ibid.). Almost all of these key challenges, except for time and momentum which have not explicitly been mentioned, echo supporting conditions for and obstacles to change as identified in section 5.3. This supports the hypothesis that organisational culture may play a role for the success of CSS implementation and it provides evidence that some of the change supporting conditions and/or obstacles possess particular relevance also for SMEs. The case study analysis may serve to detect more relevant factors.

²⁵ based on Dutch-speaking Belgium SME owners and managers (Fassin et al., 2011)

6. Case Study – Thomas Regout International B.V.²⁶

6.1 Company Introduction

6.1.1 Company History

The company *Thomas Regout* was founded in 1834 as a manufacturer of nails and spikes. Within the following almost two centuries, *Thomas Regout* survived various economic and political crises, extended their production lines from curtain rails, over bicycle parts, metal studs and buttons, up to telescopic slides. Now under the name *Thomas Regout Group*, the company is divided into two entities *Thomas Regout B.V.* and *Thomas Regout International B.V.* (TRI). The latter finds itself in a world-wide leading position in designing and producing telescopic slides, in combination with vertical balance and linear motion systems (TRI Website, 2013). TRI is a company with a long tradition and a great amount of the overall 230 employees that have been with the company for many years. Currently around 67% of employees have worked at TRI for more than twenty years.²⁷ This also comes along with a high average age of employees and in 2011 71% of the employees were older than 45 years [27]. The company premises are located in the South of the Netherlands, in Limburg.

For a long time it was possible to produce telescopic slides on a large scale. TRI was leading in this market segment, however, over time more companies entered the market that could provide more flexibility and shorter delivery times, too, and the climate became more competitive [27]. Moreover, globalisation and cheaper production in Asia have made an impact on this and a shift in the business strategy was necessary to secure further growth of the company [27]. Towards the end of the last century, TRI decided to focus on customized and high quality products. In 1999, the company was taken over by the American company *CompX Inc.*, which at the time was expanding to Europe. *CompX Inc.* had already taken over a competitor of *Thomas Regout*, when it made the board of *Thomas Regout* an offer they could not resist [26]. After the take-over, business, however, was not going so good and profit decreased [27]. *CompX Inc.* had estimated European culture and the European market wrongly. The company wanted to produce on a large scale and translated their American business model to the company. However, they were not aware that the European market was more fragmented, consisting of sub-markets, and was not subject to the same amount of standardization as in the United States. Under the pressure *CompX Inc.* began to reduce costs wherever possible and made no long term investments into the company [27]. In 2005, at the point where *CompX Inc.* only saw two possibilities left to either sell TRI or close it, a management-buy-out succeeded to bring TRI back into Dutch ownership [27]. Moreover, in the recent past *Thomas Regout* has acquired *Melamo* (now Melamo Stainless Modules (MSM)) and *Drillmasters* (TRI Website, 2013). In 2009, the Regout Group embarked upon a joint venture with *Anchis Technologies*, which is now a major source for research and development of innovative products (ibid.).

²⁶ Note: the data collection of the case study was based on a number of interviews, meetings and conversations. Date, actors and subject can be found in the Appendix A. The list is numbered according to the chronological order of the interviews (etc.) that have taken place and throughout the case study these numbers (e.g. [1]) will be used to indicate from which interview or meeting the information was derived. Other sources will be referred to in the same way as in the previous sections.

²⁷ Based on internal company data: Annual Social Report (*Sociale Jaarverslag*), 2012

6.1.2 Company Structure

This case study, however, will focus on *Thomas Regout International B.V.* and the following figure shows the internal organisational structure of this branch of the *Thomas Regout Group* (see Figure 31).

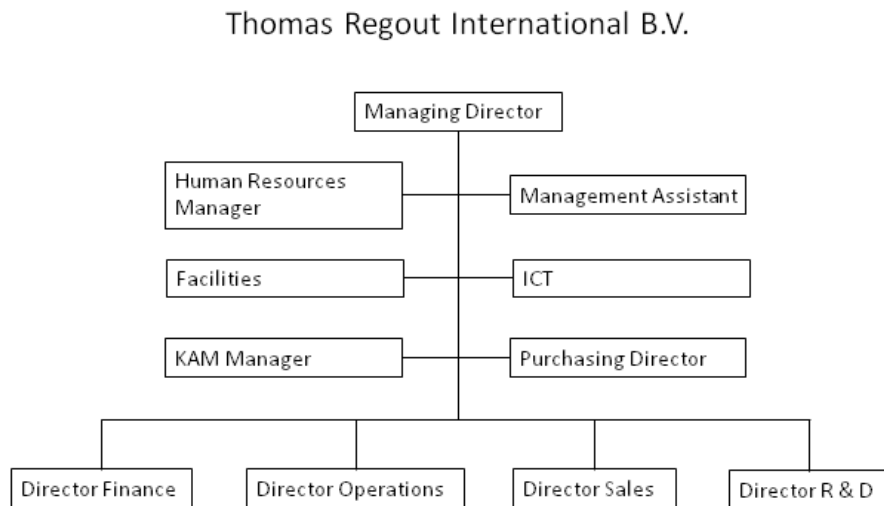


Figure 31 - Thomas Regout International B.V. - Organisational Structure²⁸

The responsibility about worker's safety and environmental matters is placed within the quality, environment, security & health department (KAM²⁹) of Thomas Regout. The KAM department is also the driving force behind CSS development. The internal structure of a company divides responsibilities and structures information flows and thus needs to be known and understood when looking into a CSS implementation process.

Next to the internal structure, it also plays a role where within a supply chain a company is situated. Whether in newspapers, sustainable business blogs, by consultancies, government publications or any other source, almost in all cases when reading about corporate sustainability there will be mention of the increase of customer awareness and their willingness to pay more for green products (see e.g. Boston Consulting Group 2008 survey). What is often forgotten by the promoters of corporate sustainability is that the business exchanges taking place between businesses and not between a business and the end consumer are many more and are even likely to increase in volume in the future (Shelly & Rosenblatt, 2010, p.10). While it is still possible that end-consumer pressure leads to supply chain pressures that also effect B2B companies, the effect of the rising awareness among end-product consumers may have been overrated in the past and more research with regards to CS implementation in B2B companies is needed. That TRI is a B2B company thus plays a role with regards to the stakeholder pressures and motivational drivers it is subjected to, which can be found among the list of supporting conditions for change (power of key stakeholders, see section 5.3). Bansal (2005) identified media pressure and societal movements as a motivational driver, without direct end-consumer contact a company, however, is unlikely to be impaired by such pressures. Moreover, it is likely to influence the 'where' decision within the sustainability approaches

²⁸ Information has been obtained through the internal management system (2013).

²⁹ KAM stands for the department of Quality, Environment, Security and Health (in Dutch: Kwaliteit, Milieu, Veiligheid & Gezondheid) and is derived from the original name for this department: kwaliteit, arbeidsomstandigheden en milieu (Quality, work environment and environment)

map, which describes where a certain approach/company places CS importance with regards to its various internal and external stakeholders. Figure 32 illustrates TRI's position in the supply chain.

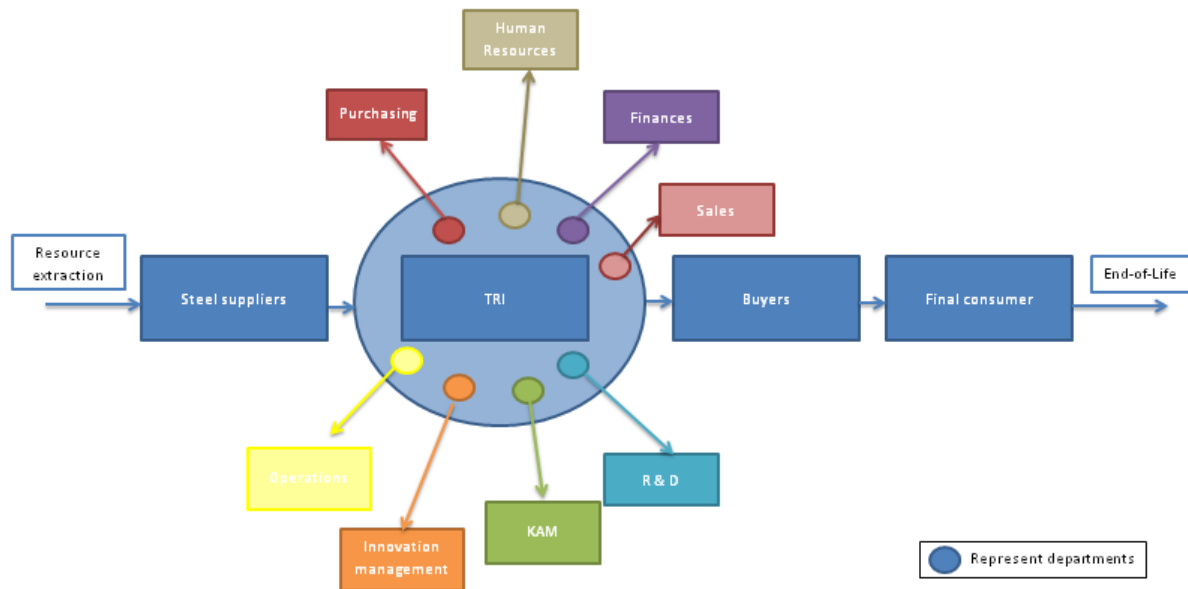


Figure 32 - TRI in the Supply Chain³⁰

Telescopic slides can be used in various market segments: automotive, industry, furniture, professional storage, trade (TRI website, 2013). Moreover, the combination with vertical balance systems makes an application in the audio visual, care, wholesale, vending and machine building sectors possible (ibid.).

As with regards to the SME characteristics that have been identified by Jenkins (2006) - (1) SMEs are often owner-managed, which results in a personalised style of management; (2) more difficult to regulate as opposed to larger firms; and (3) SMEs can often be more adaptive -, it is important to note that Jenkins based these characteristics on a sample of SMEs with 25 up to 120 employees. They are thus only of limited applicability for TRI. With TRI the owners sit in the holding of the *Thomas Regout Group*, of which TRI is a part and are still relatively close to the events on the floor, however, not close enough as that this can be determined as a relevant factor of difference from large enterprises. Regarding the second factor, also only a limited relevance can be detected as with regards to governmental regulation and bureaucracy the company is more similar to larger firms, they are however less exposed to public or private enterprises. Whether TRI is comparably more adaptive due to its state of a medium-sized enterprise cannot clearly be established. Their market strategy that aims to provide specialised products and thus smaller volumes, short delivery times and more customized changes in the product from one order to the next [5], may indicate that they are comparably more adaptive but to establish a link between these factors and size is out of the scope of this case study research.

6.1.3 CSS development at Thomas Regout International B.V.

The plan to develop a CSS at TRI arose out of a long-term engagement of the environmental department (KAM), and in particular a change agent within this department, to foster CS related issues, which was eventually taken on by TRI's management. If successfully implemented this

³⁰ Information has been obtained through the internal management system (2013).

strategy may then serve as a model for all other business entities. In the beginning of 2013, TRI's strategy stated "Our strategy is to stay your global existing partner in business for the next 175 years" (TRI Website, 2013). This was complemented by the mission statement "We make linear motion reliable, goal-oriented, sustainable and capable to be integrated into systems"³¹. The environmental management of TRI has recognized that this aim is only viable if sustainability efforts are integrated at the very core of the business strategy. In this respect first steps were made by implementing ISO 9001, ISO/TS 16949, as well as ISO 14001 (ibid.) [1]. Also the REACH regulation is being adhered to (ibid.) [2]. However, it has become clear to key actors at the KAM department that the implementation of these standards is not enough to ensure a sustainable production as well as development of the company [2]. What is seen to be lacking is a realization by all employees and the top-management of the sustainability principles in the everyday work patterns and work environment [2]; thus, its integration in the business culture.

The previously introduced ideas and theories of change management can provide a sound knowledge base for identifying crucial factors for a successful paradigm shift in TRI's business culture. In order to go beyond the mere acquirement of ISO certifications, TRI is planning to develop a clear and useful, long-term sustainability strategy. The thesis research that is carried out aims to both support this process, as well as to gain insights from the practical implementation of this strategy regarding supporting conditions, obstacles to change and the usage of CS approach elements and CS management systems.

6.1.4 Change agent(s)

The main change agent at TRI could be identified to be the environmental manager. He is intensely interested and involved with the sustainability objectives and plays a dominant role in all stages of the process. His determination is a driving factor for the change process. He also fulfils all five criteria as introduced by Chakrabarti (1974): technical competence, knowledge about the organisation, knowledge of the market, drive and aggressiveness and political astuteness [1,2,3,6,10,13,14, 15,17,18,19,20,24]. His efforts are particularly supported by a project manager in the R&D department [17,20] and the operations director [20]. Also the general director is supportive and emerging as a driving factor of the CS implementation [2,16,20,21,25,27]. Their support is to some degree a result of the change agent's ability to translate and embed the understanding about sustainability [17,19,20]. This process, which has been termed sensemaking, influences organisational learning and change in mental models (Van der Heijden et al., 2012).

³¹ In Dutch: Wij maken lineaire beweging betrouwbaar, oplossingsgericht, duurzaam en integreerbaar in systemen. (translated by author)

6.2 Case analysis

6.2.1 Timeline development

In order to gain an overview on key events relating to change towards CS at TRI, a timeline (Figure 33) has been developed. It displays crucial management decisions and the implementation of projects in connection with CS.

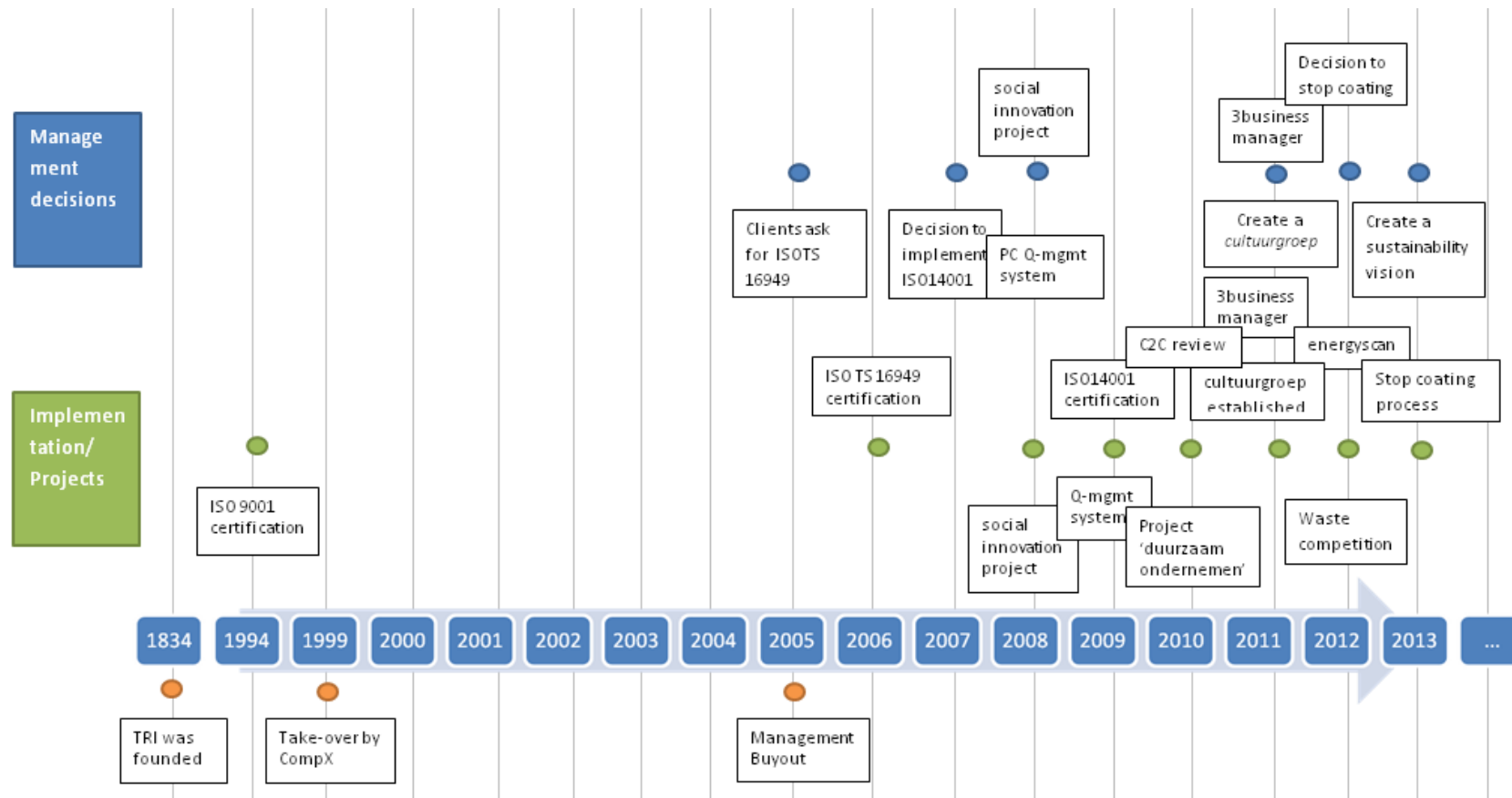


Figure 33 - Timeline TRI

The development of TRI's quality and environmental management up until the 1990s had no specific ambition or alignment towards CS. The core tasks of the KAM department, which were related to sustainability before the 1990s were compliance with regulation and acquiring permits. Hereby, a close collaboration with the municipality of Maastricht took place and the support of the consultancy Tebodin was made use of e.g. for soil investigations [19]. In 1999, the **take-over by the American company CompX Inc. in 1999**, and the developments that followed can be seen to have been a trigger for an internal re-orientation of the company. During the time under *CompX Inc.*, their wrong estimation of the market soon led to pressures, which were responded to by allowing solely for short-term investments and a cutting of costs wherever possible. The care for company culture and work environment subsequently decreased [27]. An example for this was the decision to suspend open days, which before were a regular event during which the residents of the area could get familiar with the company [20]. When the **TRI management succeeded in a buy-out in 2005**, new strategies were sought to secure the survival of the company. For the management team this was a time, in which they had to start again from zero [20,26,27]. The mental model in the company was still coined by the 'pre-CompX-era', in which TRI followed strong hierarchical structures [20] internally and dominated the market for telescopic slides worldwide and could allow itself to have long delivery periods and an inflexible production [27]. New strategies connected to both quality management, in order to increase the value of their products, as well as to changes that effected company culture were perceived as essential to enable TRI to regain profitability [27]. The management buy-out can thus be seen as a decisive moment in the change process towards CS at TRI.

6.2.1.1 Quality Management

Generally it can be said that TRI works on reducing its waste and energy usage in order to save costs. Also in terms of regulation compliance, for example regarding REACH, TRI has aimed to be among the first to implement such and to ban or replace problematic chemicals [20]. The environmental and quality management has also introduced a number of ISO norms, beginning with the **implementation of ISO 9001 in 1994**. Currently this certification is valid for Thomas Regout B.V.³², one of the companies of the Regout Group, producing for the market of window decoration [20]. In the following years **ISO/TS 16949**, as well as **ISO 14001** have been implemented.³³

Due to a growing **demand for ISO/TS 16949 certification** from the automotive industry, which is an important client of TRI, it was decided that this certification should take place [19,20]. Eventually TRI **got certified in 2006**³⁴. The implementation of the norm also prompted the development of a new **computer-based quality management system**, which served to gather, structure all relevant quality information and make it easily available and easy to keep it up to date [1]. All procedures and important documents such as data sheets, key performance indicators (KPIs), FMEAs (Failure Mode and Effects Analyses) can be found in the system by all employees. Following the procedural sheets employees are for instance able to know when things have to be reported to the environmental management.³⁵ The system was found to be very useful, it did, however not succeed to eliminate on-going communication problems between the different departments [22].

³² Thomas Regout was separated into Thomas Regout International B.V. (telescopic slides) and Thomas Regout B.V. (window decoration) in 2008.

³³ Information has been obtained through the internal management system (2013)

³⁴ Information has been obtained through the internal management system (2013)

³⁵ Information has been obtained through the internal management system (2013)

ISO 14001 implementation (certified in March 2009)

The implementation of the TS norm in 2006 provided the motivation to get familiar with ISO14001 in order to improve the environmental management, too [1,19]. At the beginning of 2007, the KAM department noted that clients are asking more often for ISO14001³⁶, which can be seen to be connected to a general increasing interest for this type of certification for example in the automotive sector (see González-Benito & González-Benito, 2005; González et al., 2008), which belongs to one of TRI's most important clients [2,19,20]. Moreover, an external consultant advised acquiring ISO14001 as TRI was already fulfilling almost all of the necessary requirements and could thus rather easily get the certification [19]. The quality management favoured this option as the ISO norm and connected audits would more clearly show deficits and help to improve TRI's environmental performance [19]. Due to the pressure of the change agent, these considerations resulted in the establishment of a steering group. Nevertheless, at first the steering group had to convince the management as to the value of this certificate, which was ultimately achieved through cost-benefit evaluations that showed the economic advantages going along with environmental improvements, and because first clients starting to ask for ISO14001. Another convincing argument was that an ISO14001 certificate has a signalling effect to regulators, who then know that the company has a management system in place and are more advanced, which thus makes it easier to obtain permits [19]. Eventually in fall 2007 the assent of the board of directors to begin preparing for an ISO14001 certification was given.³⁷ During the implementation a clear eco-efficiency focus was placed on energy savings and efficiency, which was becoming a concern at the time and was also promising in terms of investment returns [19,20]. The ISO14001 implementation was then also perceived as beneficial by the management [19]. It becomes clear that the implementation of ISO14001 was driven mainly by regulatory and customer pressures. Next to profit consideration, related environmental issues such as energy usage were also connected to the decision. The description of the process reveals that little social criteria or social pressures played a role within this development.

Overall, the implementation took around one and a half years and the ISO14001 certification was issued on 18 March 2009³⁸. It took place without major draw-backs, however, while it was regarded as needing comparably little action at TRI, putting things on paper and structuring them according to the standard, still entailed a change process. As observed by the external consultant accompanying TRI, people were, as it is typically to be found, reluctant to change and it took time to adapt to the changes even despite the benefits that were becoming clear [19]. The external consultant could identify the leading role of the change agent, and his continuous motivating talks, as a key success factor [19]. The implementation was first piloted in one department and took place with a mixture of top-down instructions and bottom-up educations [19]. The quality management at TRI is now hoping that the guideline ISO26000, even though it is not certifiable, can also soon be added to the quality management system and thus provide for more attention to the area of corporate social responsibility [1].

Another interesting CS related issue is that in 2010 TRI initiated a **cradle to cradle review** of one of its products (TRI Website, 2013), which showed that the product as such, which mostly consists of steel, has cradle to cradle characteristics in terms of its recyclability. Problems, however, lie in coating as well as the overall supply chain [20]. **Coating** is an environmentally problematic

³⁶ Internal company protocol (January 2007)

³⁷ Internal company protocols (May 2007; September 2007)

³⁸ Information has been obtained through the internal management system (2013)

process due the chemicals that need to be used. TRI decided to eliminate the coating process at their company premises and the elimination took place in 2013³⁹. This decision entails that the coating, if required by clients, takes place at another point in the supply chain.

Several actions have thus taken place at TRI that are concerned with environmental improvements. The implementation of such has to a strong degree been technocratic and has not contributed much to a change in values and in company culture.

6.2.1.2 Company culture change

After the management buy-out, however, not just quality improvements, but also a paradigm shift in business strategy and culture was strongly desired as a part of the new strategy by the new management team [20]. This desire was due to the described discontent with the company climate under *CompX Inc.* and a fresh management team with a more modern business management attitude. TRI thus began to implement a number of measures to convert the top-down management culture into a more participative one. The new strategy emphasizes a need for flexibility and innovation within the company and a clear outlook for future market developments. TRI thus has already discovered the need for a business culture shift in order to be resilient to the new market developments, which demand more and more flexibility and innovative strength. Sustainability is considered a mean to create this new company culture. Therefore, for **instance three business manager positions** for each business line have been created in 2011 [20,27], who have a strong mandate to research future market needs and are directly linked to the Sales department [2].⁴⁰ Another change that was made was that the R&D department now consists of employees from all areas, such as processing and sales, to guarantee a smooth development, as opposed to a previously limited group [3].

Social Innovation Project (2008)

In 2008, TRI took part in a social innovation project called “moving into the future”, organised by and supported by the European Social Fund with the goal of establishing a flexible work organisation.⁴¹ This project can be seen as one of the main milestones and drivers that constitute the cultural change at TRI. In the years before the participation it had become clear to the company that it is lacking resilience to respond to the market volatilities and that more flexibility was needed to create this resilience. Uncertainty about market developments was a clear motivation and also the critical argument for the management to allow a budget for this project in order to strengthen their employee base. For the direct employees the motivation for the participation typically did not lie in the growth prospects and financial gains as such, but their job security which was intended to be ensured through this change in work organisation [20].

In the framework of social innovation it was aimed to improve the organisation of work processes and times and the flexibility of employees with the help of training courses and a change of working functions. It was thereby sought to enhance personnel competences, but also the structural system behind it, including information flows, thus creating a more open and dynamic company

³⁹ Gemeente Maastricht (Municipality of Maastricht). Omgevingsvergunning. Een milieuneutrale verandering i.v.m. het verwijderen van de lacactiviteit en een loods (March 2013)

⁴⁰ Information has been obtained through the internal management system (2013)

⁴¹ Social Innovation Project Application Data (*aanvraag subsidie ESF*) (2008)

environment. The project was implemented with the help of a working group that consisted of members from all levels of the company and came together every two days for a timespan of around six months. The benefit of the project for the work productivity of TRI was estimated to be an 5% increase. The internal project leader was the human resource manager and the project coordinator was the environmental manager.⁴²

In order to improve the employee's ability to adapt and to ensure their continued health among others TRI introduced flexible working (*flexmaatregelen*) and autonomous teams (Metaalnieuws, 2012). The concerns surrounding flexibility and work environment originate from the high average age of employees [1,20]. Flexible working means that employees have to work in different production parts in order to ensure that they can fulfil different functions that strain the body in different way, so that they are less likely to become unfit to work due to health concerns [5]. Next to the physical impacts of this new style of working, flexibility can also provide for more room for employee ideas and initiatives by breaking up former hierarchical structures.

Cultuurgroep (2011)

Already for many years TRI attempts to include employees through such initiatives as the *informatie balie* (information stand) where they can inform themselves about the latest developments of the company, but also hand in ideas for e.g. energy saving measurements or other improvements (*ideeënbox* – idea box).⁴³ The Ideabox has already provided TRI with ideas for over a decade (TRiNFO, 2012a), in 2012 for instance nineteen ideas brought up savings of around 30.000€ (TRiNFO, 2012b). As a result of the social innovation project and in line with developments such as the ISO14001 implementation and the participation in a project by the FME *Duurzaamheidskompas* termed '*duurzaam ondernemen*' (thus corporate sustainability), TRI's policy at the time was termed "moving into the future", describing desired developments until 2014 [20]. In the discussions surrounding these ideas it became clear that what was needed in order to achieve the more objective and financial goals would also be a change in the company culture and work environment. This realization then resulted in the *cultuurgroep* formation, in 2011 [20]. In the beginning this group was seen to be solely responsible for changes and action until they managed to increasingly make clear that in fact they are steering the process, but that action has to be taken by everyone and on all levels. The group does, however, initiate projects like a waste competition in order to reduce steel waste and are responsible for measuring and monitoring the changes that are happening [20].

Waste competition (2012/2013)⁴⁴

The theoretical discussion and best practice examples of organisational change management have highlighted the importance of employee engagement in CS. TRI has - mainly due to the *cultuurgroep* - recently made great improvements in this area. On 10 October 2012, the '*dag van de duurzaamheid*' (Dutch sustainability day), employees of TRI participated in a workshop about waste reduction. This was to be the prelude of the waste competition, which had been initiated and developed within the *cultuurgroep* [14]. The competition focused on the amount of steel waste that could be reduced

⁴² Social Innovation Project Application Data (*aanvraag subsidie ESF*) (2008)

⁴³ Observations in company environment and information as provided on the *informatie-balie* (December 2012)

⁴⁴ As this event was one that took place during the research period, the account of it will serve as a more detailed example of the developments driven by the *cultuurgroep* within TRI

within the production of TRI. For that all direct and indirect employees⁴⁵ were distributed into six teams of around 30 people. These teams worked together over a period of 3 months to come up with ideas how to reduce the steel waste and thereby create savings of up to 100,000€ [10,11].

When evaluating the presentations the jury was positively surprised about the great effort of all teams, their enthusiasm about the competition and their ideas. The focus and the philosophy behind the competition can be placed closely to eco-efficiency, due to the many efficiency gains that were presented. In the design of the competition the triple bottom line, which is a known concept within the company, played a relevant role. Although the management presented as the goal of the competition a clear profit gain with a help of waste reductions connected to an improved environmental performance, also the people factor was of great importance for the competition. Due to the set-up of the teams, with a mixture of different functions, a team leader and coaches, who gave special attention to leadership and team working skills, an improvement in company culture, work environment, and environmental awareness could be achieved. In fact, as an observant, which was also supported by the impression of the two external judges, the social benefits of the competition may be seen as the greatest. At this point it has to be mentioned that also a few people did not participate or were not willing to support the team work in a constructive manner [10,11]. Moreover, a number of employees complained about the amount of time they had to spend on the project and the increasing work pressure as less time remained for their usual tasks.⁴⁶ Also in change management theory this has been identified as one of the main obstacles of such initiatives. A number of times it was emphasized that the implementation of the ideas was seen to be a crucial signal to the employees that their effort is taken seriously [10,11]. As the participants themselves pointed out and as supported by change management theory, this will be a crucial factor as it shows credibility of the management.

In January 2013, during the New Year's reception the two finalist teams could present their ideas to the whole company and everybody had one vote to decide on the winning idea. It was promised that such a competition will now be held annually with changing subjects [14]. For the improvement of the work environment, team work, creativity and waste awareness, the competition was a great success. Whether these improvements and the awareness will remain with the company for the long-term, remains to be seen. Moreover, positive reminders of the competition and follow-up changes can provide the basis for a long-term success. During the competition, employees designed clothes out of steel waste, other art and a short movie clip which illustrates the role of each individual in paying attention to what is thrown away. The external jury members advised to make use of these symbols and the management planned to do so [11]. It becomes very clear that after the collective efforts of the employees, the management's choice in strategy on how to proceed will be decisive for the overall success.

In February 2013, the implementation of waste competition ideas was started in self-supporting teams with a control group. The numbers are reported on at the company's information stand [20]. As of yet the symbols of the competition have not been instrumentalized.⁴⁷ It seems that the initial enthusiasm and motivation of the employees about the waste reduction has already

⁴⁵ Direct and indirect employees is a company-internal term differentiating those employees working in the production from those in the managing departments

⁴⁶ Various talks among people 'on the floor' (January 2013)

⁴⁷ Observations in company environment (May 2013)

started ebbing of after around two months [27]. To recall to life this enthusiasm is one of the aims of TRI's CSS and vision development [27].

Vision creation (2013)

In section 5.5, a study by Fassin et al. (2011) was introduced that claimed that at SME level the understanding about CSR⁴⁸ is rather converging, but often characterized by a more pragmatic and implicit usage, for instance by breaking it down into parts such as environmental management or work-life balance. These findings are interesting in regard to TRI, as the case study showed that CS at TRI is indeed often described by the various projects it connects rather than the collective CS term [2,3,4,5,8,20]. Fassin et al. (2011) also found that the usage of these implicit terms does not constitute a barrier to a converging understanding about CSR between SME owners and managers. In their research, however, they did not consider more closely the differing understandings of the CSR or CS concept that may emerge within one company (ibid.). The in-depth analysis of TRI revealed that almost every single person in the higher and middle management levels had a differing understanding of CSR and CS [1,2,3,4,5,6,8,12,20]. In general, the term 'MVO beleid' (CSR policy) was used by most actors to describe the CSR planning and process. Others, however, referred to sustainability in general or described the processes in their separate parts. It was widely agreed that the three P's, also referred to as the triple bottom line, are the central concept of the *MVO beleid*. However, the usage of the 3Ps term resulted by no means in the same understanding [1,2,3,5,6,12,20]. On the contrary, in particular the emphasis on any of the three Ps or all of them at the same time, as well as their connectedness differed strongly. For example in a draft of the CS⁴⁹ policy (from 13-02-2013), profit was described as growths, in terms of numbers and regarding general changes in the business lines, but with no relation to people or planet.⁵⁰ Another example of differing understandings concerns the question whether a sustainability strategy has to do with transparency or whether it needs to be reported on. Many of the misunderstandings originated already in the definition that actors provided. Quality, discussed in relation with sustainability, was for instance described as being maximized when product costs are minimized [5]. After a number of conversations with an external consultant⁵¹ and repeated meetings with the management team a CS vision (Figure 34) was drafted that shall serve as an umbrella to integrate all previous projects as well as future plans regarding the corporate sustainability of TRI.⁵² At that time the management decided to refer solely to corporate sustainability to describe their strategy in the future [21].

⁴⁸ Fassin et al.'s research focuses on the usage of CSR as an umbrella term for CSR or CS activities. Its application is thus more similar to the CS definition than the CSR definition as used in this paper and the application of their findings to this case are therefore justified.

⁴⁹ While in the beginning of the research process most actors referred to CSR activities, this was altered over time with an increased understanding of the differences between the CSR and CS term (in line with the definitions provided in this study) [16]. The draft policy was thus already called a CS policy.

⁵⁰ CSR policy draft by general director, 13.02.2013

⁵¹ The external consultancy support in this case was provided by the author in the function as an intern for the corporate sustainability strategy development.

⁵² Draft from 5 May 2013

Corporate sustainability vision

We want to be the market leader by means of offering comfort to our clients and the users of our products. We create solutions through high quality products that cause no harm to the environment, but instead protect it through the applicability for sustainable systems. We achieve this through being a trustworthy partner for our clients with a positive and innovative company culture that fosters people's development and well-being.

Figure 34 - Corporate Sustainability Vision Draft (May 2013)⁵³

In connection with the vision creation a strategy paper was developed that points out three goals that TRI wants to achieve with its new vision and corporate sustainability policy.

Sustainability goals:

- 15% less energy usage in 2020,
- 30% less waste in 2015,
- Creating an open business culture and belonging to the top 5 of the most attractive employers in the region.

Figure 35 - Sustainability goals (as drafted by the management team, May 2013)⁵⁴

To create measurable objectives for sustainability changes is a crucial ingredient in a large number of CS approaches. These sustainability goals can then serve as KPIs for the CSS development. The vision and goals are presented here are a preliminary result of the vision and CS strategy development. The top-level management is currently presenting their basic suggestions to the middle-management in order to jointly develop the vision and strategy further [27]. In the past the TRI management has made the experience that to present the middle-management with a fully worked-out and detailed strategy will not lead to the desired results. This is because the middle management had difficulties to accept and to ingrain the strategy into their daily work activities. They did not succeed to translate the big overarching goals to their departments [27]. If changing values and basic assumptions are not diffused among the employees they will face difficulties to implement any new strategy based on these. Part of the implementation process of the new CSS is anticipated to be a detailed change programme termed the 'Factory of the Future' [27].

6.2.1.3 KPIs in the steel industry

To choose energy usage and waste as KPIs for the CSS, is a decision that is supported when looking at important environmental concerns of the industry that TRI belongs to. With steel as their main resource, TRI belongs to the metal industry and has thus specific sustainability needs connected to this resource as well as its production processes that are needed for the telescopic slides. Globally, industries whose main product is based on steel, experience a major 'sustainability advantage' as steel is 100% recyclable (Eurofer, 2006) "without the loss of key properties such as strength, ductility or formability" (Yellishetty et al., 2011, p.659). It is due to the magnetic property of steel that it can easily be divided from the rest of the waste stream; "highly mechanized and efficient scrap-sorting

⁵³ Translation from Dutch by author; for Dutch version see Appendix D.

⁵⁴ Translation from Dutch by author; for Dutch version see Appendix D.

technologies” do the rest (p.653). At the same token this does not mean that steel is actually recycled to 100%. In reality, in the years 2007 – 2011, annually around 37 to 40 % of steel production was based on scrap steel, representing recycled steel (Bureau of International Recycling, 2012). In the Netherlands this number in 2011 was as low as around 25,4% (ibid.). The first environmental issue that can be identified is thus that the resource steel requires an efficient and economical usage. Moreover, processes in the steel industry are subject to high energy needs (World Steel Association, 2008). With energy prices rising and global price volatilities, energy dependence is another crucial issue for the metal/steel industry (Energy Information Administration, 2009). In line with this a study found that the major environmental concerns connected to the steel industry are energy consumption, recycling and CO2 emissions (Ecorys, 2011). However, in general the steel industry was seen to have made great efficiency improvements over the last decades in particular with regards to energy consumption and recycling (ibid.). The bad news about this is that currently not many improvements can be expected without the development of innovative technologies, in particular with regards to CO2 emissions (ibid.). From the data on the steel and basic metal industries (1) steel recycling and (2) CO2 emissions in connection with energy consumption can be identified as key sustainability factors for this sector and these will thus be given particular attention within the case analysis. In order to find out more about the effect that these decisions and projects had on the corporate sustainability performance, they will be in the following be related to the two derived KPIs. The third sustainability goal of belonging to the best 5 employees in the region will not be related to the timeline as there is no past data that is connected to this goal.

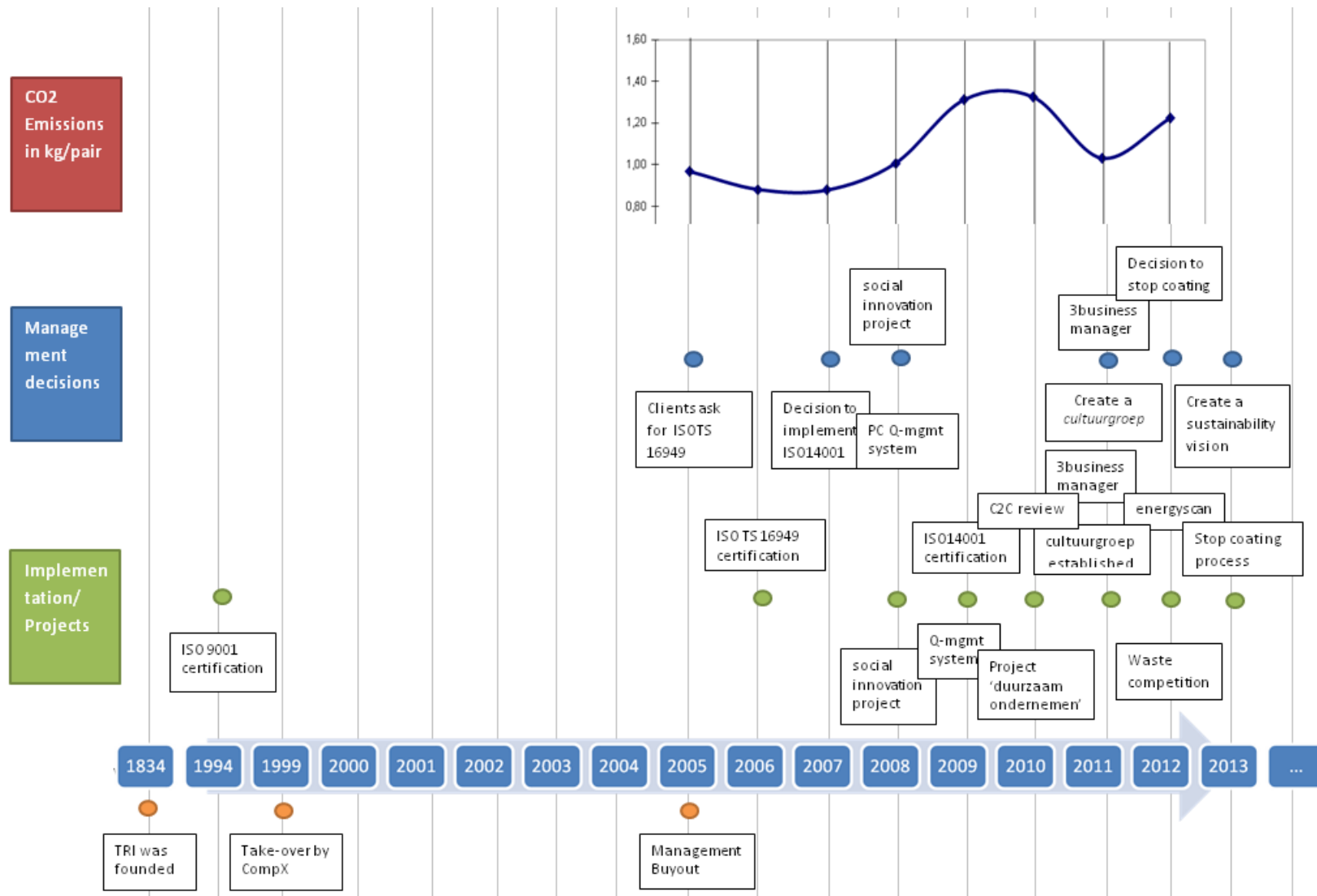


Figure 36 - Timeline TRI related to CO2 emissions

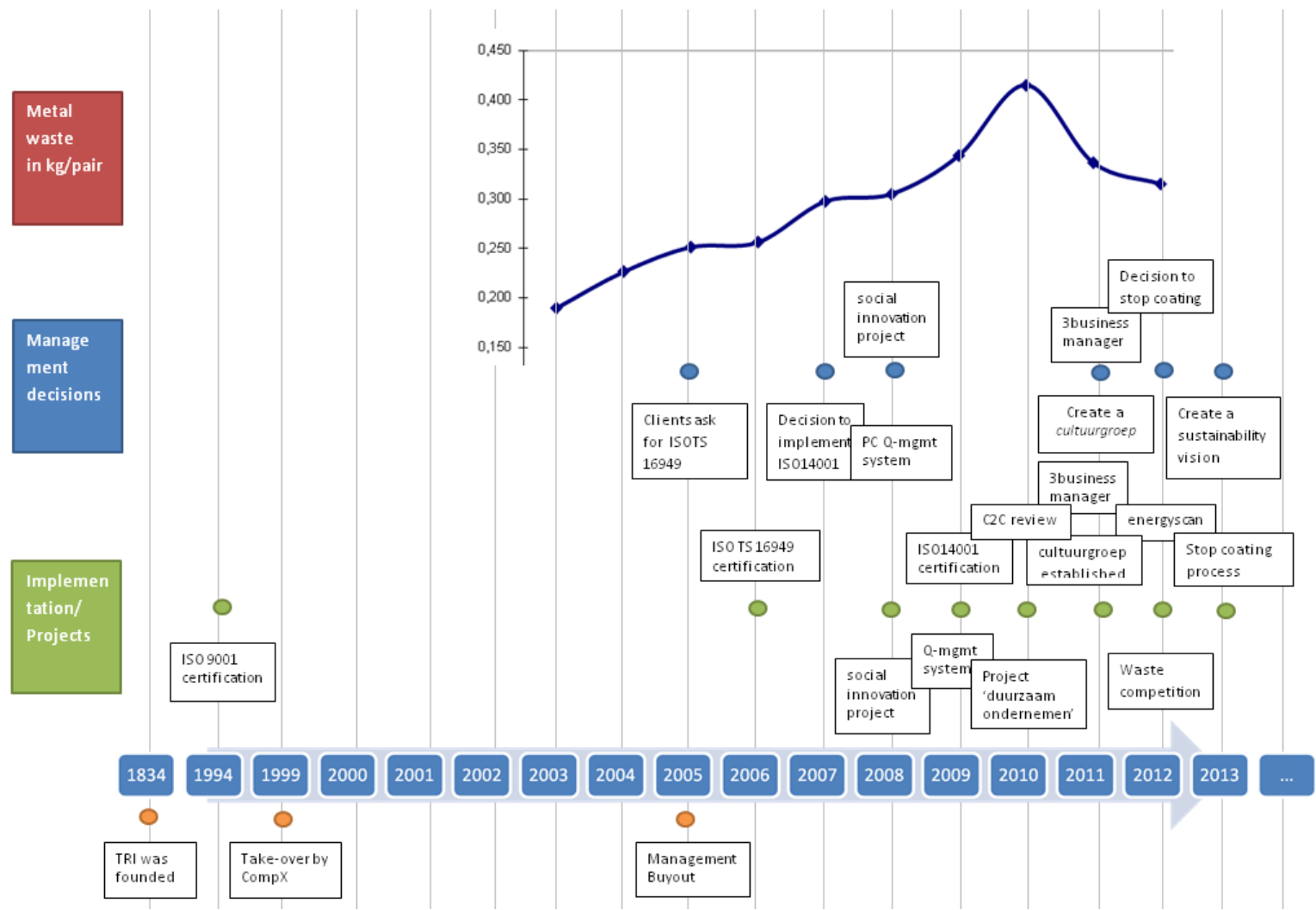


Figure 37 - Timeline TRI as related to metal waste

TRI has collected its data on CO2 emissions since 2005. Figure 36 on page 69 shows that the CO2 emissions normalized for production first increased until 2009 and 2010, after which a first decrease could be achieved in 2011. In 2012, however, CO2 emissions increased once more. The introduction of ISO14001 in 2009, as well as the engagement in the 'duurzaam ondernemen' project of 2010 could have contributed to an interim decrease. That emissions started to increase again, however, shows the lack of long-term impact that has been achieved as of now. For metal waste data from 2003 on is available; and a similar correlation can be found (see Figure 37, p.70). Until 2010 metal waste per pair in kg increased significantly, but a reduction in waste could be recorded in the following years. For the metal waste indicator in particular the following years will be of interest, as the waste competition aimed at reducing metal waste took place only in 2012/2013.

What the graphs do not reveal is that the amount of production was falling from 2006 and particularly low in the in the years of 2009 and 2010, after which it increased again. The high peaks of CO2 emissions are thus likely to be connected to a high amount of energy needs that are not directly linked to production capacity. For metal waste a decrease in overall metal waste, was also not proportional to the decrease in metal waste per pair, which could be connected to problems of scale. That the increase in the production amount of 2011 was correlated to a decrease of CO2 emissions and metal waste can be seen as a positive sign, follow-up data, however will be necessary to clarify the long-term effects of the introduction of key projects, such as the ISO14001 implementation, the cultuurgroep and the waste competition.

While there is no indicator with enough explanatory power for the social KPI (belonging to the top 5 employees of the region) over a longer time period, so that it could be related to the timeline, in the following four questions from a yearly employee questionnaire were chosen to indicate changes in the work environment over the last few years. The *cultuurgroep* regularly asks a number of employees (in a random fashion) questions related to the company development and environment. The four questions that were chosen could most strongly be related to work environment changes. In the table below (Table 6) the percentage represents the number of employee that answered each question with yes. In all cases the positive response has been increasing since 2011 (from when on the questions have been asked) and there is a clear increase in the beginning of 2013, which is very likely to be related to the positive experience of the waste competition and the promises made by the management regarding the follow-up of the collected ideas (see section on waste competition).

Table 6 - Work environment questionnaire 'thermometer' (*Cultuurgroep*, 2013; translation by author)⁵⁵

Questions	Total 2011	Average in 2012	1 st quarter of 2013
Does the board know what is happening among the employees?	40%	50%	74%
Do you have the feeling that everybody can participate, take the initiative and develop ideas?	85%	90,5%	94%
Do we dare to tell each other (leaders and colleagues) what could be done better?	74%	80,2%	91%
Is Thomas Regout busy developing the future?	79%	83,9%	87%

⁵⁵ See Appendix C for original questionnaire version in Dutch

6.2.2 Applying MoCSAs to the CSS of TRI⁵⁶

In order to shed more light on the sustainability approach of TRI, in the following the mapping methodology as developed in chapter 4.3 will be employed. In a first mapping trial a number of difficulties were established: First, when trying to map TRI as the approaches have been mapped with only one 'correct answer' to each axis, the map fails to show differences between intentions for the future development and the manner in which things are currently implemented. Second, due to various key actors and change agents that play a role for corporate sustainability as has been established in the review of organisational change theory, the intentions within the company differ. It has therefore been decided to differentiate between the intentions of the management team (based on the statements of the general director, as he is the leader within this group) and the intentions of the change agent at TRI, the environmental manager. Figure 38 shows which symbols have been used to represent each standpoint.

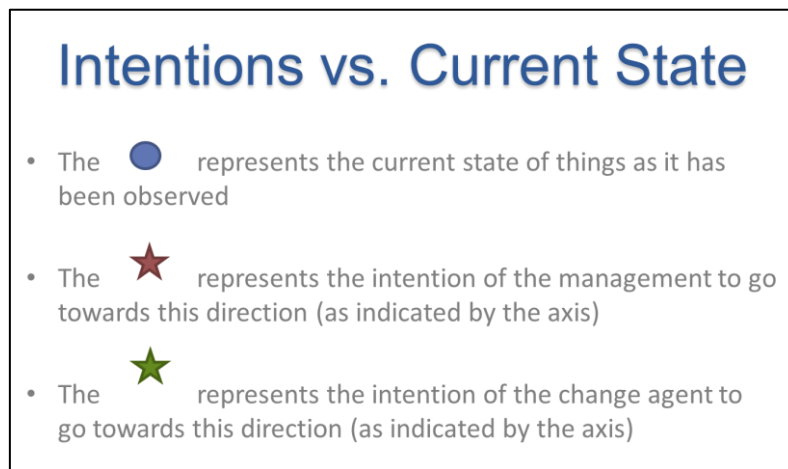


Figure 38 - Intentions vs. Current State

In the following these three elements will be mapped on the axes system answering questions in the context of corporate sustainability at TRI regarding scope, why, what, how, where and when as presented in section 4.3.

⁵⁶ The sources in this part refer to statements of actors made during interview, or observations that have been made by the researcher during those interviews and talks.

Scope/Vision

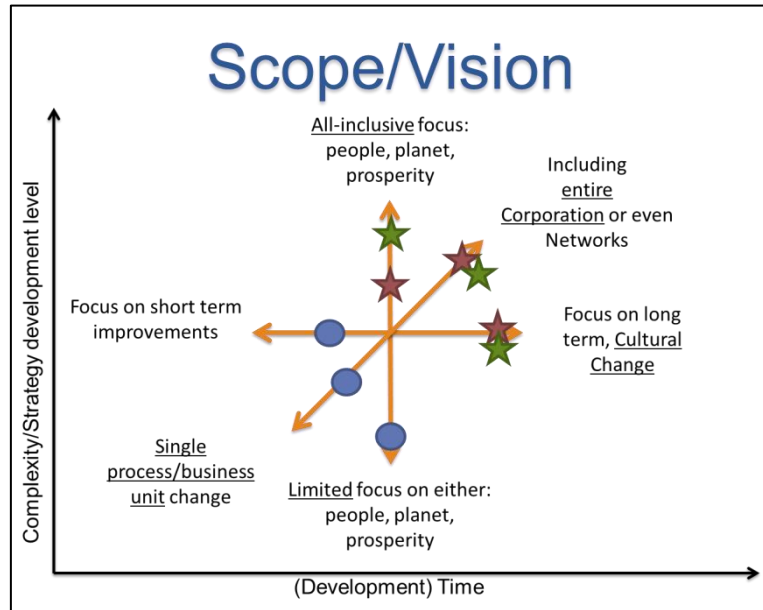


Figure 39 - Scope and Vision of TRI's CSS

Are all three dimensions considered OR are only one or two dimensions addressed? And even if all three are originally mentioned, does a bias towards one or two exist?

TRI states that the core of their CS efforts are to include the 3Ps [2,5,20], but in reality almost all key actors in the management do not see all 3 Ps as having equal value [1,2,3,4,5,6,8,21]. In the past before the decision to implement ISO14001 as well as the decision to take part in the social innovation project, the management's main concern with regards to such projects was profit [19,20]. After the social innovation project and with the establishment of the *cultuurgroep*, the people factor came to the fore [20], in particular due to concerns about the high average employee age [5,20,27]. When it comes to sustainability related projects or plans such as the "factory of the future", the people-factor is often given more attention than to planet concerns [5]. As respects finances, the chief financial officer confirms that people are in the focus and that environmental concerns are considered to be dealt with in the KAM department [6]. The Human Resource department, where employee concerns would typically be placed, itself states that they have no general or overarching sustainability policy, but focus on specific goals such as employee health [15]. When it comes to the R&D department the priority list reads as follows: functionality, quality, costs and then sustainability [3,4,8]. The innovations manager reported that no sustainability concerns are included in the innovation research [4]. New markets, new products and new product applications are the focal topics [4]. TRI thus has a limited and fragmented focus in its 3Ps application, but both the KAM department as well as the general director state that their intention is an equal inclusion of all 3Ps [2,5,20]. The 3Ps concept has been understood and embraced to its full extent by the change agent and it is his intention to promote it [20]. With regards to the management team the understanding of the 3Ps and thus their intention still seems to differ and the intention-star has hence only been placed half-way [2,5,6,8,20].

	Obstacle to change	Link to CS approaches map
Institutionalization factors	Inability to steer funding	Scope/Vision – Limited focus

This axis of the vision/scope map can be linked to one obstacle to change indirectly, namely an inability to steer funding. This is because a limited focus will lead to a disregard for environmental issues in investments. Indeed the change agent at TRI reports difficulties to steer funding for CS related projects [20]. The inclusion of all 3Ps at all times could reduce this problem as it would require adjusting ROI (return of investments) for CS investments [1,6]. At the same time, however, TRI has a budget available for improvements in the production, which in the past they could not even fully use, due to lack of people and time to implement projects [15].

Is the main goal short-term improvements OR is long-term, cultural change intended?

The management team as well as KAM aim for an overall cultural change [2,5,10,11,14,15,20,22,27], as can be seen in the establishment of the *cultuurgroep* which has just that as its main goal [5,20]. Before the social innovation project in 2008, the sustainability related projects of TRI were mainly focused on short term goals. Driving factors for the ISO14001 implementation were for example energy savings, the demand by clients as well as an alleviated communication with regulatory bodies [19,20]. The social innovation project triggered the idea that a company culture change is essential [20]. However, while the management intention is starting to shift to a more long-term vision [5,16,25,27], as also represented by the 'Factory of the future' plans [5], in practice often short-term goals are still prioritized [3,12,20]. If for example problems arise with one of the production lines, all other projects and plans are put aside and may completely disappear. As it was termed by the change agent people are prone to lose the bigger picture in '*de waan van de dag*' (= working according to the issues/news of the day) [20]. The energyscan that was conducted in 2012 provided ideas for long-term solutions and smaller projects with a shorter pay-back period.⁵⁷ The latter have been considered more viable by several actors [1,6]. For the decision of investments, some exceptions for sustainability projects have been made, but in average an ROI time of 3-5 years is applied [6]. An interesting observation that was made was that several key actors faced difficulties when asked to state their idea of where TRI will be and what it will look like in 10 years from now [3,4,8].

	Supporting condition for change	Link to CS approaches map
Company culture factors	Vision: Development of long-term visions and concrete proposals of how to achieve change (milestones); Consistency from strategic vision to day-to-day behaviour	Scope/Vision? – focus on long-term cultural change

⁵⁷ Energy Scan report for Thomas Regout Maastricht in February 2013.

	Obstacle to change	Link to CS approaches map
Company culture factors	Failure to ‘anchor’ cultural change: If pressure for change is removed and the new values and social norms are not yet anchored in the company culture, change is likely to be lost or even reversed.	Vision/Scope – Focus on long-term cultural change*
Individual Characteristics factors	Reaching the limit of management commitment ; Indifference of senior managers	Vision/scope – focus on short term improvement

A criterion for change which can be connected to a long-term cultural change is the development of a vision (Lozano, 2012a). In 2013, TRI decided to develop a CS vision [16,21] and is currently still in the process of doing so [25,27]. During the process it became clear that there is still a lot of resistance to a long-term vision, which aims at very ambitious goals [21]. However, the current version of the CS vision can be seen as feasible and includes clear measurable goals [25,27]. The TRI management plans to strongly involve the middle management in the diffusion of the long-term vision throughout the company [27].

Also two obstacles to change can be considered to stand in relation to this axis: the failure to anchor change and limited commitment or indifference of senior managers. These two obstacles are connected with an emphasis on short-term goals over long-term goals. If only short-term objectives and improvement takes place it is unlikely that the cultural change will be anchored within the company (Lozano, 2012a). Instead the issues and improvements will soon be forgotten (Kotter, 1995, in Buchanan et al., 2005). A hinder for long-term goals to come into existence can be the refusal from a management team which is not committed to CS. At TRI the degree to which management team members are committed to CS differs strongly, some of them thus exert influence which distracts from the development of a long-term vision and goals [20].

Is only one single process or business unit addressed to be 'changed' OR is the entire corporation or even the corporate network addressed to be 'changed'?

TRI aims to introduce CS and cultural change within the whole company [2,5,14,20,21,25,27]. While for instance the waste competition that took place was inclusive [7,10,11], the implementation of projects often takes place in a fragmented manner [9]. Often the intention is more inclusive, but this is not achieved in practice due to communication problems between departments [5,9,20,27]. The various departments tend to work separate from another, and think only related to their own day-today-business, which goes as far as to averting any communication by claiming ‘that’s not your business’ [20,27]. Moreover, there is little to no communication between the different departments with regards to sustainability projects, for instance between sales, purchasing and R & D [8]. In other cases, the KAM department [6,8] or the *cultuurgroep* [20] is seen to be in charge of certain projects and any responsibilities to integrate elements into other areas are thus rejected. Moreover, also a lack of systems thinking leads to a focus of specific elements instead of a perspective that looks at the overall company functioning. The C2C review that took place for instance was based on only the product, building-related factors or other departments were not considered [3,20]. The CS vision and strategy, however, will aim to integrate all single projects and all goals to an overarching CSS that aims to change the company as a whole [16,21,25,27].

	Obstacle to change	Link to CS approaches map
Institutionalization factors	Inadequate attention to any combination of the organization characteristics, intervention characteristics or institutionalisation processes	Scope/vision – single business unit

The obstacle to change which is connected to this axis, emphasizes how important it is to give attention to the characteristics and structure of the company and to how institutionalisation of a change paradigm can take place within the company.

Why?

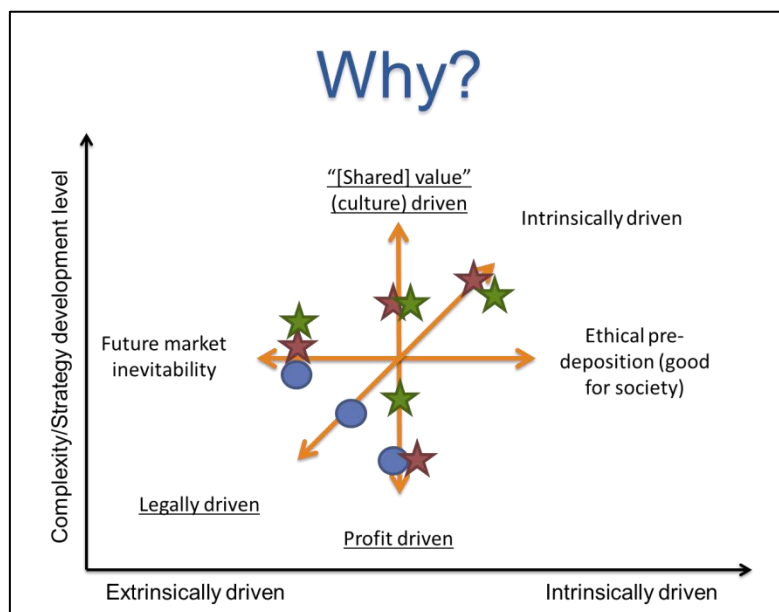


Figure 40 - Why has TRI implemented CS?

Is the reason for application based on values OR are profit gains the main driver for the application?

Management decisions to include sustainability are mainly profit driven, despite the desire to incorporate environmental and social concerns as well [2,6,8,19,20,27]. These concerns arise often out of practical problems, such as the high average age of employees, which demonstrates a need to find young talented employees, who TRI wants to attract through improvements in the work environment [2,5,15,20,27]. The CS implementation from a management point of view is currently not based on shared values. The understandings and opinions within the management about the meaning and use of CS at the beginning of this study have been very fragmented [2,5,6,8,20]. During the process of the CS vision development, a realization took place that there is indeed a great gap between the different understandings [16,26,27], which the management is currently aiming to close [27]. It is difficult to place the management on the axis, as it is not assumed that a stronger focus on shared values would lead to profit losing its central role as a driver of this CS axis. That is because it could be observed that the problem of a lack of shared values was identified and talked about [2,5,10,11,14,15,20,22,27], but at the same time currently still many obstacles can be identified at TRI that are likely to counteract this development [9,15,19,20,22,27]. In the KAM department profit

and company survival is seen and accepted as an important motivational driver for CS implementation [1,20]. Nevertheless, a greater consideration of shared values as a driver for example to be made explicit in the form of a sustainability criterion for investments or CS requirements for suppliers is promoted by the change agent [1,20]. For cultural change to take place shared values have been identified as an important layer of company culture in Schein’s model. Once shared values and beliefs exist they can be internalized and basic assumptions changed. Only then change becomes ingrained in the organisational culture. At TRI even changes with regards to artefacts as described by Schein are still lacking to a great extent. To utilize the various items that the teams have produced at the waste competition could provide for artefacts [11,16].

	Supporting condition for change	Link to CS approaches map
Company culture factors	Change in mental models through informational, emotional and behavioural attitudes	Why? – shared values
Managerial factors	Fit of strategy with managerial values	Why? – Shared values
Situational factors	Fit with competitive strategy	Why? – e.g. profit driven
	Obstacle to change	Link to CS approaches map
Company culture factors	Undervaluing long-term investments in human resources	Why? – profit driven
Individual Characteristics factors	Reaching ‘undiscussable’ issues that might lead to conflict	Why? – Shared value*

How important organisational change is for this ‘why-axis’ is reflected in the amount of supporting conditions for and obstacles to change that relate to this topic. Most importantly values exhibit great influence on the possibility to change mental models (Lozano, 2008 and 2012a). This indicates that in order to successfully drive CS change the advancement of a company culture that is based on sustainability values is essential. This is also connected to the necessity of the management team’s values to fit to the CSS values, which is not unanimously given at TRI as was previously explained. However, as described above the realisation of this is currently starting to emerge. Another supporting condition for change, the ‘fit with competitive strategy’, illustrates that profit is a valid motivational driver. If the actions that are taken to promote CS change fit well with these, it is more likely that change will take place (Rimmer et al.,1996, as cited in Buchanan et al., 2005).

The obstacle to change of ‘arising conflict when reaching undiscussable issues’ is one of the things that is currently slowing down the process [20,27]. If issues are considered as undiscussable and are therefore not brought on the table to avoid conflict, or only lead to conflict without a problem-solving process, this can have serious impacts as it prohibits the whole discussion about new values that might change understandings and mental models. It has been attested repeatedly that the company culture at TRI is coined by traditional hierarchical thinking, lack of communication and an inability to take criticism [9,15,19,20,22,27]. The initiatives of the *cultuurgroep*, such as connected to autonomous working, leadership skills and communication coaching (TRiNFO, 2013), are possibilities to break open this ‘old’ business culture [5,15].

The second obstacle to change of the undervaluing of long-term investments in human resources also plays a role at TRI. The problem of aging employees and difficulties to attract a younger generation has been recognized [5,20,27]. While opinions about the gravity of this problem differ [20], actions to tackle it is incorporated in the strategy planning [5,20,27].

Has the approach been developed because of anticipated future market inevitability OR has the approach developed due to ethical reasoning?

The main factor that necessitated a shift in style of management in company culture was identified by several interviewees to have been the need to produce faster and more flexible in the future due to market demands [2,3,5,6,12,19,20,27]. The current policy is not without the idea to improve also the work environment for the people [5,15,20,27], but in the end this is always derived from its necessity for company survival [19,20,27]. While there is more attention to matters concerning society and community at the environmental department, the driving theme remains the future market inevitability [20].

	Supporting condition for change	Link to CS approaches map
Situational factors	Fit with competitive strategy	Why? – e.g. anticipated future market inevitability
	Obstacle to change	Link to CS approaches map
Company culture factors	Undervaluing long-term investments in human resources	Why? – Ethical predisposition*
Institutionalization factors	Inability to steer funding	Why? – ethical predisposition

Similar to the previous axis, a fit with competitive strategy can be interpreted as a supporting condition to change and undervaluing long-term investments and obstacle to change, also in connection with a strategy that is based on either future market inevitability or an ethical predisposition. If the motivation for CS implementation is based on market inevitability, market developments are also likely to influence the funding of CS projects (Reisner, 2002, as cited in Buchanan et al., 2005).

Did the approach originate due to legal obligations OR did the approach originate due to intrinsic motivation?

Future regulation and requirements were initial drivers for sustainability changes at TRI and remain a justification for the environmental department to convince the management of action [19,20], but the intention that is stated by the management is detached from legal requirements. The motivation to undertake serious changes in the company arose in particular after the management buy-out at a time when TRI was in a difficult situation [19,20,21,27], and from insights from the social innovation project [20,21], which was subsidised by the national government, but a voluntary project [20]. It is difficult to place the status-circle on the axis as the beginnings of the approach can be seen to be strongly influenced by legislation but over time have developed towards a more intrinsic approach. The current CSS development, however, is not based on any regulation or legislative developments and if at all in the desire to be ahead of regulatory requirements [19,20].

	Supporting condition for change	Link to CS approaches map
Situational factors	Change is perceived as central to organisational performance	Why? – Intrinsically driven

A factor that can support cultural change is if the change is perceived to be central to the organisational performance, which can be connected to an intrinsically driven CS approach. The realization of the urgency for a cultural change and eventually also CS development can thus facilitate change [20,27].

What?

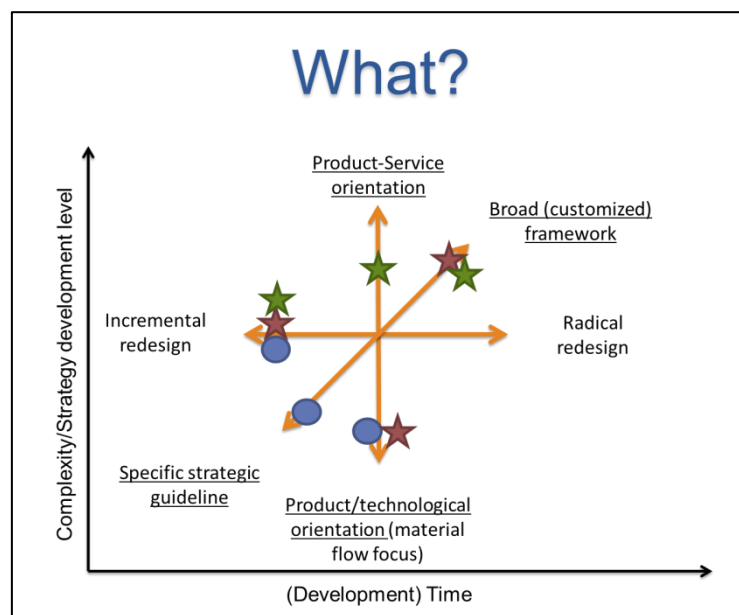


Figure 41 - What is being done to implement CS at TRI?

Does the approach incorporate or envision a development towards servitization OR does the approach have a dominant focus on the product and production technology?

There is a clear focus on the product and production processes when it comes to TRI's CS strategy [5] and while a few actors suggested ideas on how to become a product-service provider these are not seriously considered [1,3].

Does the approach require incremental redesign of processes OR does the approach require a radical redesign of processes?

In the past the changes at TRI have taken place in incremental steps, there may have been rather radical policy paradigm shifts (e.g. after the take-over by *CompX Inc.* and the subsequent management buy-out [27]), but the operational changes remain incremental. An example that TRI does not desire a radical redesign is the opinion of the management that the CS vision should not be "too ambitious" (for instance aiming at zero emissions) as such a radical change will not take place under current conditions [21]. Cultural change is a major part of the redesign processes that take place and it has continuously been expressed that this is a development that needs time [5,20,27].

Can the approach rather be seen as a specific strategic guideline OR can the approach rather be seen as a broad customized framework which needs to be deeply embedded?

As of now sustainability and CSR have been used as specific guidelines to achieve certain aims (more independence of workers, increased efficiency, decreased costs (waste competition) [1,3,4,5,6,8,10,11,14,19,20]). An example is the implementation process of the ISO14001 certification, which also had a strategic dimension, but put an emphasis on helping the employees on the floor in the practical implementation [19]. However, in particular the CSS development and waste competition show that the intention is a deep embeddedness of CS in the company culture.

	Supporting condition for change	Link to CS approaches map
Institutionalization factors	Information: Best practice examples and local activities; Information about the reason, subject and consequences of change is available; can enter and diffuse through the organisation.	What? – Embeddedness.
	Obstacle to change	Link to CS approaches map
Individual Characteristics factors	Tackling symptoms and not problems	What? – Practical tool

The diffusion about information on CS and the company’s goals, as well as the understanding of why things are changing and what the consequences of this are, can support in embedding CS in the company culture (Lozano, 2012a; Isaksson et al., 2010; Griffiths & Petrick, 2001). Such is less likely to occur when communication between departments and people is not optimal, which has been identified to be the case at TRI (as previously referred to for instance due to the hierarchical structure, specialized departments with an “that’s not your business” attitude) [5,9,20,27]. Best practice examples and local activities are seen to be a tool to enhance information diffusion (Lozano, 2012a). The account of the waste competition and the positive feedback of many employees support the argument that such can improve the information diffusion and become a supporting condition for change [11,14].

One important danger, if CS is only used as a strategic guideline, is that only symptoms are tackled and not problems. This sort of thinking is something which can be observed at TRI if it comes for instance to failure notifications in the production to the environmental management. It is common that over and over again the same failures are entered, which suggests that instead of finding the underlying cause of the problem it has only been treated superficially.⁵⁸ The *cultuurgroep* and CSS strategy which are intended to support an embedding of new thinking and behaviour in contrast aim at tackling underlying problems such as the organisational culture, employee age and mind-set.

⁵⁸ Information has been obtained through the internal management system (2013)

How?

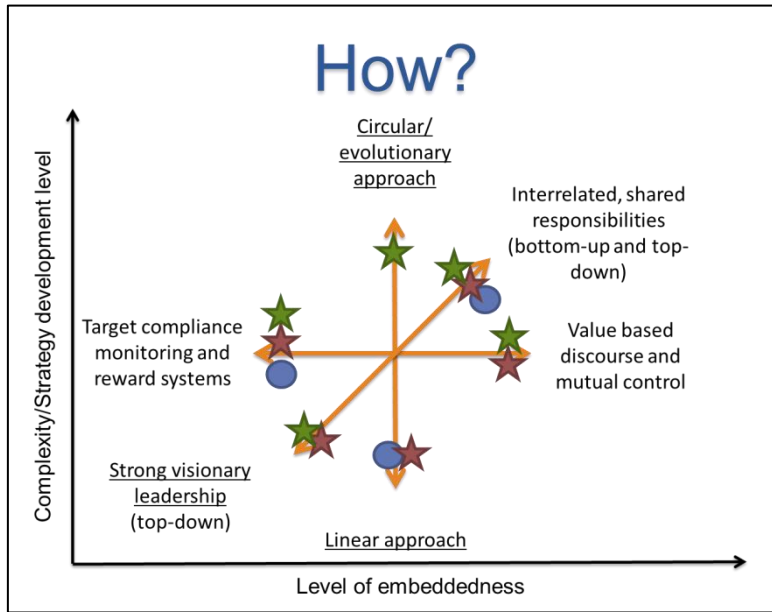


Figure 42 - How is CS implemented on an organisational level at TRI?

Is the approach meant to be continuously assessed and improved in a circular manner OR is the approach seen as a linear process of implementation?

The ISO certifications and the corresponding management system require an evolutionary approach to sustainability changes [19,20], in reality, however, the implementation of change processes is often characterized by a lack of attention to the check and act dimension of the PDCA cycle. This can be seen in a resistance to schedule internal audits and for instance in audit reports, which exhibit that sometimes the same issues are noticed a couple of years in a row [20]. While the importance of evolutionary thinking has been understood by KAM [20], the management thinking is still more directed towards perceived end goals and finalization of projects [20,27], as also connected to short-term thinking (see above). For example the implementation of the winning ideas of the waste competition are being monitored by a focus group, but the observation that the initial enthusiasm and engagement has significantly decreased after only two months did not lead to any decisions to 'act' by for example re-stimulating the awareness through the use of artefacts or progress reports [27].

	Supporting conditions for change	Link to CS approaches map
Company culture factors	Systemic/systems thinking	How? –Evolutionary approach
	Obstacle to change	Link to CS approaches map
Company culture factors	Linear thinking	How? – Linear approach

The theory of systems thinking promotes the idea that structures (note: and structures also link to performance) can only be changed if a system is understood in its complexity (Hjorth & Bagheri,

2006). Systems thinking thereby goes even further than evolutionary thinking, because not only future developments but also parallel developments in e.g. other disciplines are considered (ibid.). The strict separation and unwillingness to communicate of TRI's departments promotes linear thinking instead of systems thinking. These communication problems can even be found within departments. Employees have raised concerns regarding their lack of knowledge and information about projects that are being developed simultaneously by their colleagues [8]. First attempts to create more multidisciplinary and open minded teams have been made by integrating different backgrounds in the R & D department [3], by introducing the three business manager positions and autonomous teams [5,15,20]. Systems thinking is also relevant for the CS vision and strategy development. The management and the change agent have recognized the problems, which the great amount of CS projects and plans that take place at the same time, but apart from each other at different levels and with different targets, creates for the implementation of an overarching strategy [16]. The CS vision and strategy will aim to tackle this problem [16,21,25]. Also the 'Factory of the Future' development plans feature a planning, which is more directed to the company as an integrated system [5].

Is the success of the approach controlled by monitoring and reward systems OR is the success envisioned by value based discourse and mutual control?

As of now most changes have been achieved through target compliance & monitoring (certifications) [19,20] and reward systems (waste competition) [11,12], however the aim to change the company culture clearly shows that the management also wants the culture to become a supporting structure [2,5,10,11,14,15,20,22,27]. In this case also the target compliance end of this axis becomes an intention-star as it is intended to continue and improve this, for instance through the creation of a focus group that monitors the implementation of the waste competition [15].

	Supporting condition for change	Link to CS approaches map
Institutionalization factors	Effective quality management system; adequate improvement infrastructure; procedures in place to counteract arising problems	How? – target compliance, monitoring

This axis can be linked directly to the supporting effect that a quality management system and connected improvement infrastructure and procedures are seen to have for change management (Dale et al., 1999, as cited in Buchanan et al., 2005). TRI has a quality management system in place [1], however, as indicated above problems can be found in particular with regards to internal audits and the 'act' dimension of the PDCA cycle [1,20].

Is the approach intended to be initiated by strong (top-down) leadership styles OR is the approach intended to be initiated by shared responsibilities (bottom-up & top-down)?

In the case of TRI the responsibilities connected to sustainability are mainly situated in the KAM department thus leading to more of a bottom-up movement to include more sustainability issues. A stronger leadership on CS issues to coordinate efforts, however, is called for [3]. In the future it is intended to provide visionary leadership as an umbrella to coordinate these efforts [16]. This axis is again somewhat misleading, because TRI and KAM do not intend to leave behind bottom-up initiative in exchange for strong leadership, but aim to add the latter [27].

	Supporting condition for change	Link to CS approaches map
Managerial factors	Management credibility	How? – Strong visionary leadership
Institutionalization factors	Clear responsibilities for change management	How? – Shared responsibilities
	Obstacle to change	Link to CS approaches map
Institutionalization factors	Certain architectural design features of organisations (commonly associated with traditional corporations) <ul style="list-style-type: none"> ○ Hierarchical organisations ○ Centralized command and control style of management ○ Reactive approaches to ecological and human sustainability issues 	How? – Shared responsibilities*

It has been mentioned a number of times now that hierarchical features work against the cultural change at TRI [9,15,19,20,22,27], there is no centralized command and control style, but the approach to ecological and human sustainability issues can be described as reactive, these are for example postponed due to the argument that customers are not asking for them yet [3]. A number of actors, however, realizes that if these issues are not dealt with now, the company will run behind by the time customers are asking for them [3,20].

Managerial factors have been found to play a great role in supporting organisational change processes (Buchanan et al., 2005). A number of employees referred to the criterion of management credibility, when they inquired for the management intentions to really follow up on their waste reduction ideas. They also pointed out that a lack of response would be a great disappointment to them [15]. Moreover, clear responsibilities for change management are an interesting supporting condition of change with regards to TRI, as this has been placed too a large extent on the change agent [6,8]. However, also the *cultuurgroep* and the operations director, who is in charge of the 'Factory of the Future' plans, have been seen as responsible for certain parts of the CS implementation development [6,20]. With the development of a CSS, responsibilities could shift or be newly defined [27].

Where?

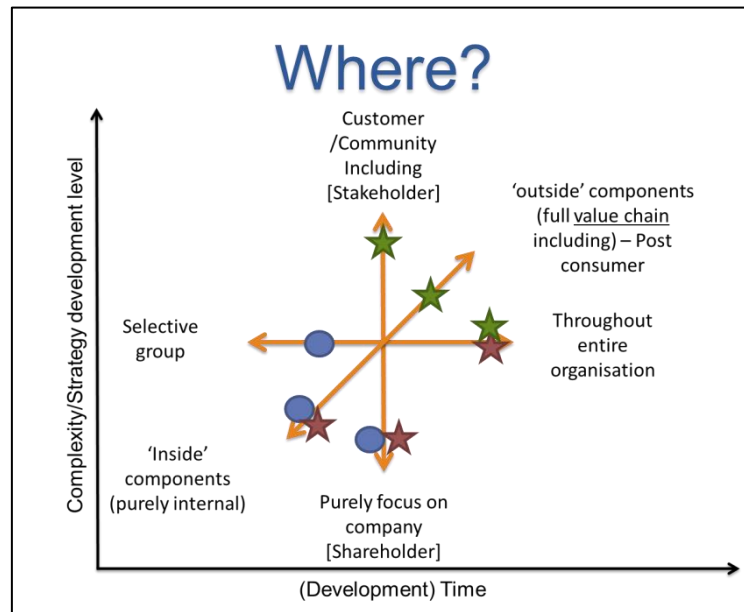


Figure 43 - Where is CS being implemented at TRI?

Are customers and indirectly affected stakeholders considered in the approach OR does the approach mainly aim at the shareholder and thus internal focus of a company?

The CS efforts currently are almost exclusively internal. The change agent would like to see more incorporation of societal concerns, in particular regarding the direct neighbourhoods [20]. He realizes that stakeholder are not just employees and the holding, but also clients, suppliers, environment, neighbourhoods and in extension also planet and people [20]. At the same time this mind-set has not yet been accepted and diffused within TRI [20].

	Supporting condition for change	Link to CS approaches map
Individual characteristics factors	Stakeholder inclusion in seeking best practices	Where? - Stakeholder

According to Rimmer et al. (1996, as cited in Buchanan et al., 2005) the inclusion of stakeholders could further promote change. The lack of consideration of end consumers as stakeholders may stem from TRI's position in the supply chain, which does not require direct contact with these.

Does only a selective group within the company benefit/is affected from/by the approach OR does the approach address a company wide application?

On the one hand, currently CS efforts include many projects, which are not interconnected, and implemented in and by different departments or parts of the company [16]. On the other hand, the *cultuurgroep* and the waste competition as well as the 'factory of the future' are designed for a company wide application. The plans for the CSS show that in the future a company wide application is aimed at [16,20,27].

	Supporting condition for change	Link to CS approaches map
Company culture factors	A secure base: Creating a secure base (consistent set of values); and in which people feel free to explore opportunities	Where? – Throughout entire organisation
Institutionalization factors	Employees: Effective teamwork; The ability to generate and utilize employee knowledge	Where? – Entire organisation
	Obstacle to change	Link to CS approaches map
Individual Characteristics factors	Lack of awareness about informational, behavioural and organisational barriers on both group and individual level	Where? – selective group

That change processes can be supported through an inclusive implementation process is supported by the ‘secure base’ and the positive role that employees can play in fostering change (Harle, 2007; Dale et al., 1999, as cited in Buchanan et al., 2005; Griffiths & Petrick, 2001). The social innovation project in the past and the waste competition more recently have both supported the awareness at TRI how much potential can be found in each individual employee [11,20]. As exemplified by one waste competition team member in the statement: “More understanding for a colleague and his work is important, we can learn a lot from each other” [11]. Also the *cultuurgroep* aims to support employee talent through autonomous teams, leadership and skills training to boost confidence and communication coaching (TRiNFO, 2013).

Lozano (2012a) found that it is critical that employees know “what sustainability refers to, to think in sustainable ways, [and] to act in sustainable ways” (p.506). If only a selective group is aware of this, that can be an obstacle to change.

Are mainly internal processes considered by the approach OR is the entire value chain considered by the approach?

Similarly to the lack of inclusion of stakeholders, TRI focuses on the internal implementation of CS and not on its value chain [3]. It is noted whether suppliers for example have an ISO14001 certification, but this is no requirement. A newly created and only recently filled function of supplier quality assurance may exert a positive influence on a future inclusion of more value chain issues [3]. To include the value chain into the CSS is seen as difficult as the main suppliers for TRI are big steel suppliers, of whom TRI is only a very small client and can thus not exert great influence [5]. With regards to other suppliers the purchasing director has suggested that instead of purchasing for example plastics, TRI should describe the characteristics they need and a supplier can then recommend a material, thereby the supplier know-how in the field of sustainability could be utilized [8]. However, as of now there are no plans to put this idea into practice [25]. The change agent is more strongly convinced that TRI should cooperate more with their suppliers and clients [20]. Overall, the CSS approach at the moment is mostly directed to internal processes.

When?

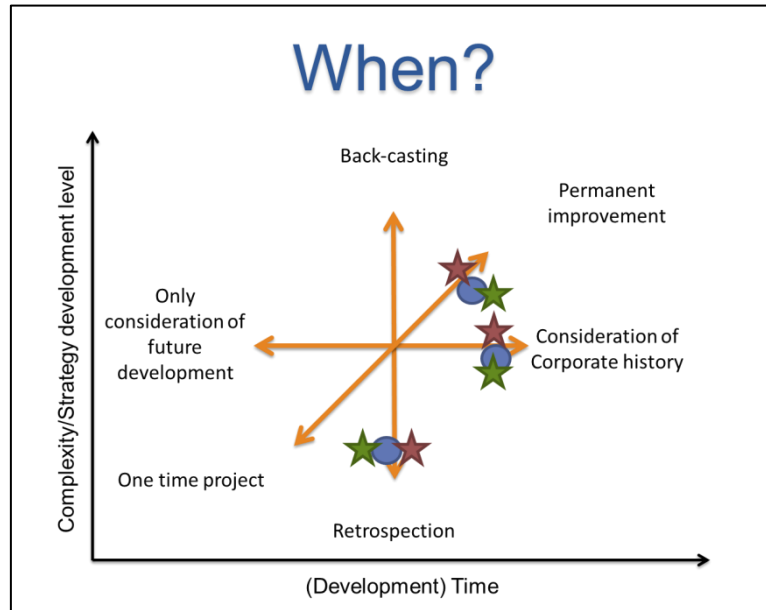


Figure 44 - What is the time dimension that is considered by TRI?

Is a future goal envisioned and the path to get there defined after the goal is set OR is the current situation taking into account for the definition of the upcoming steps?

The idea of backcasting has not been embraced at TRI. During the vision creation the suggestion to include backcasting by the external consultant [16] was not taken on board [16,21].

	Supporting condition for change	Link to CS approaches map
Managerial factors	Being comfortably out of control: dealing with uncertainty	When? – Back-casting

When applied thoroughly, back-casting can lead to dynamic thinking processes and innovative idea that support dealing with uncertainty (Burns, 1999; Robèrt, 2000). Back-casting can help to deal with complex systems (Robèrt, 2000) and can thus also support systems thinking.

Is the company history irrelevant for the approach OR is it intended to consider the company history for follow-up steps?

While there is no conscious decision to look at the corporate history when making CS decisions, there is a general awareness of the history and its influence of the current company as exemplified by concerns about the employee age and term of service, which leads to an employee base with great loyalty on the one hand, but also to problems for the ability to criticize and to accept criticism, as well as generating new ideas [20,27]. It is interesting that as shown in the timeline development the American company *CompX Inc.* failed to take into account company culture and history, which has been regarded as a key factor to the arising difficulties at TRI under their management [26,27]. In particular due to this sequence of the company history, there is much important attributed to these factors [27].

	Obstacle to change	Link to CS approaches map
Institutionalization factors	Inadequate attention to any combination of the organisation characteristics , intervention characteristics or institutionalisation processes	When? – consideration of corporate history*

It is important to be aware of a company’s history due to the fact that inadequate attention to the organisation’s characteristics can hinder the change process (Jacobs, 2002, as cited in Buchanan et al., 2005).

Is the application of the approach meant to be a one-time implementation OR is the application of the approach meant to be permanently improved and adjusted?

CS is not seen as a one-time project, but it is applied to bring permanent improvement [2,20]. For instance the decision to extend the waste competition to an annual competition, concerned with different environmental and social issues, [14] shows that TRI wants to achieve a permanent improvement. As with a number of other axes, it is difficult to place the current-state circle for this question as it already implies an intention instead of a situation description.

	Supporting condition for change	Link to CS approaches map
Institutionalization factors	Institutionalization of change	When? – Permanent improvement
	Obstacle to change	Link to CS approaches map
Company Culture factors	Getting to the real problems after having “picked all the low hanging fruits”	When? – One time project
	Declaring victory to soon	When? – One time project

The supporting conditions for change and obstacles to change illustrate that a change process can only be successful if permanently improved and adjusted and is not a one-time project (Jacobs, 2002, Kotter, 1995, and Senge et al., 1999 as cited in Buchanan et al., 2005; Pettigrew, 1985).

6.2.3 Organisational Change at TRI

6.2.3.1 Supporting conditions and obstacles that are not linked to MoCSAs

Not all supporting conditions for change (Table 7) or obstacles to change (Table 8) could be clearly linked to the MoCSAs methodology. However, a majority of them can also be connected to the case.

Table 7 - Supporting conditions for change, which could not clearly be linked to MoCSAs

	Supporting condition for change
Company culture factors	Organisational learning
Individual characteristics factors	Change agents: Support of the chief executive officer; committed individuals; sensemaking
	Training/coaching that serves individual and organisational needs
Managerial factors	Always change a winning team: Leaders need to build teams with relevant diversity for each phase
	Confidence in abilities of top management
Institutionalization factors	Fit with internal power distribution and power of key stakeholders
	Organisational structures: The actual creation of organisational structures that “are capable of capturing, processing and making sense of environmental information”; An approach in place to apply tools and make them part of company routine; Incremental changes in organisational structure and management experience
Situational factors	Development in line with popular opinion in society

Organisational learning can be enhanced by promoting contact between individuals (Lozano, 2008), for instance through communication and interdisciplinary work. An example at TRI of how organisational learning can be promoted are ‘relation-web workshops’ (in Dutch *relatieweb*) that are currently being conducted in all departments of TRI. Within the workshop it is identified, with which other departments each department is the closest interlinked, how communication with them is perceived, what the current information channels are and how these could be improved [22]. Such workshops can be considered useful tools as organisational learning theory describes that employees need to develop an understanding about the organisation’s characteristics and where problems within this lie (Van der Heijden et al., 2012). The relation-web workshops also connect to systems thinking as they enable an improved understanding of the organisation’s mechanisms and feedback links (Hjorth & Bagheri, 2006).

TRI has a strong change agent in the environmental manager, however, at the same time if this change agent would leave the company it could happen that the change process comes to a halt [17,19]. The general director, operations director and one project manager, however, are increasingly supporting the CS change process as well. If these actors together promote the creation

of organisational structures, which can support the CSS and enable it to become part of the company routing, this can further create conditions under which organisational change can take place successfully.

Other supporting conditions, which are listed above (Table 7) cannot explicitly linked to the situation at TRI and will therefore not be discussed further. Nevertheless, there are three more important obstacles to change (see Table 8), which were not linked to any MoCSAs dimension, but can be observed in the company.

Table 8 - Obstacles to change, which could not be directly linked with MoCSAs

	Obstacle to change
Individual Characteristics factors	Unwillingness to change
	Fear and anxiety: Fear/despair about required changes and how to deal with them
	Extra work added to day to day activities

In particular in connection with the waste competition the existence and problem of an unwillingness to change as well as difficulties with added workload, were observed by the participants themselves [11]. While in the framework of this competition they found solutions to deal with these problems [11], these problems appear anywhere and can for instance be seen in the difficulties the R & D department experienced when it was attempted to change the printer settings to print two pages on one piece of paper as a standard, which meant that anyone who would want to print only one page on one piece of paper had to change the settings manually [8].

In connection with an unwillingness to change can also stand a ‘fear’ about these changes, as change interferes with routines and often consequences cannot be foreseen for the individual. That this ‘fear’ exists was confirmed by several actors [8,9,12,19,20,27]. It was also linked to the high average age of employees, as for these employees to change routines is typically higher [5,19,20].

6.2.3.2 TRI projects in the CSMS cycle and what it reveals about organisational change supporting conditions and obstacles

The theoretical discussion showed that elements of organisational change management can be integrated meaningfully into the CS management system (see Figure 29 on p.52 and Figure 30 on p.53). At the same token it can provide further insights about the TRI change management to look at the projects that have taken place from a CS management system point of view and subsequently relating this to organisational change conditions and obstacles.

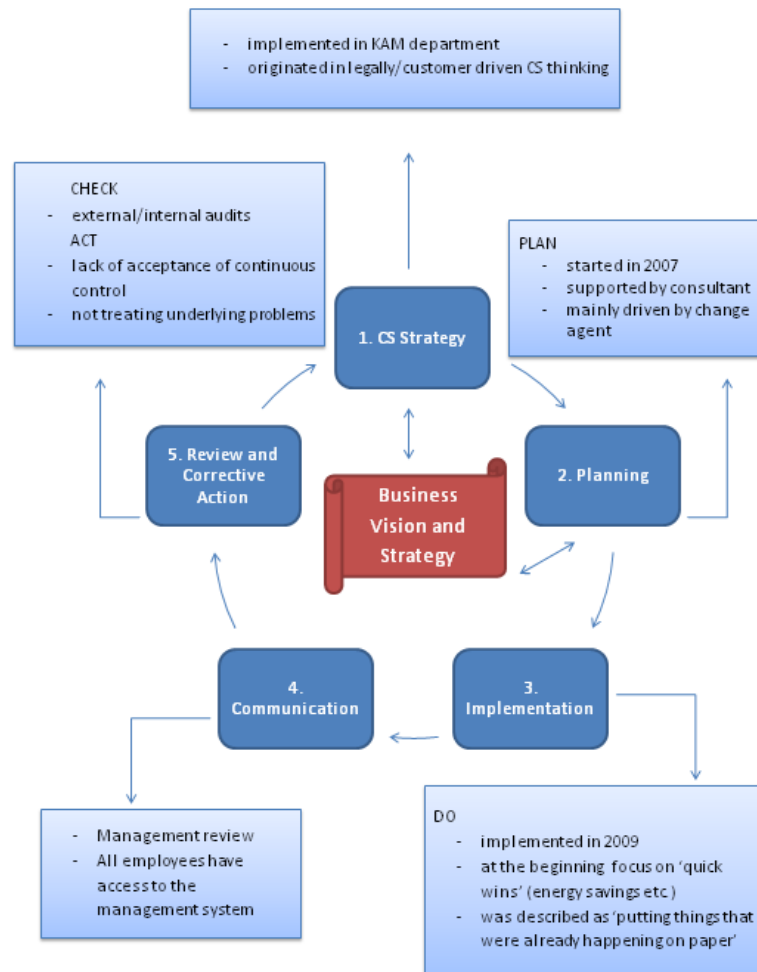


Figure 45 - Retrospective CSMS for the implementation of ISO14001

The implementation of ISO14001 was described above and is presented here (Figure 45) within the CSMS scheme. When comparing this information to the supporting conditions for change during the CS implementation as presented in section 5.4 (Figure 29, p.52), several conditions that supported the implementation at TRI can be identified. At the time of the strategic plan of bringing ISO14001 into the company there was a fit with the competitive strategy, as arguments for ISO14001 were based on market requirements [19,20]. This fit has also been described as the reason why funding for the project could be acquired [19], which may otherwise present an obstacle at this stage of the CSMS. In the planning stage and throughout the whole implementation process the change agent was observed to be the main driving actor, who kept motivating the people involved in the planning and implementation [20]. The implementation phase was perceived as adding ISO14001 to the existing management system by mostly describing what was already happening [19].

With regards to communication the relation-web workshop showed that the information about the systems functioning may not have been diffused as well as it was thought [22]. The ISO certification is checked by external and by a number of internal auditors on a regular basis. It has become apparent that while checks take place, often difficulties arise within the ‘act’ stage of the PDCA cycle, thus the corrective action does not always take place [1]. This may be connected to obstacles such as ‘linear thinking’, ‘tackling symptoms and not problems’, ‘fear and anxiety’ as well as

'unwillingness to change', which have earlier (section 5.3, Figure 30, p.53) been identified as obstacles which may exert particular influence at this stage of the CSMS.

Cultuurgroep

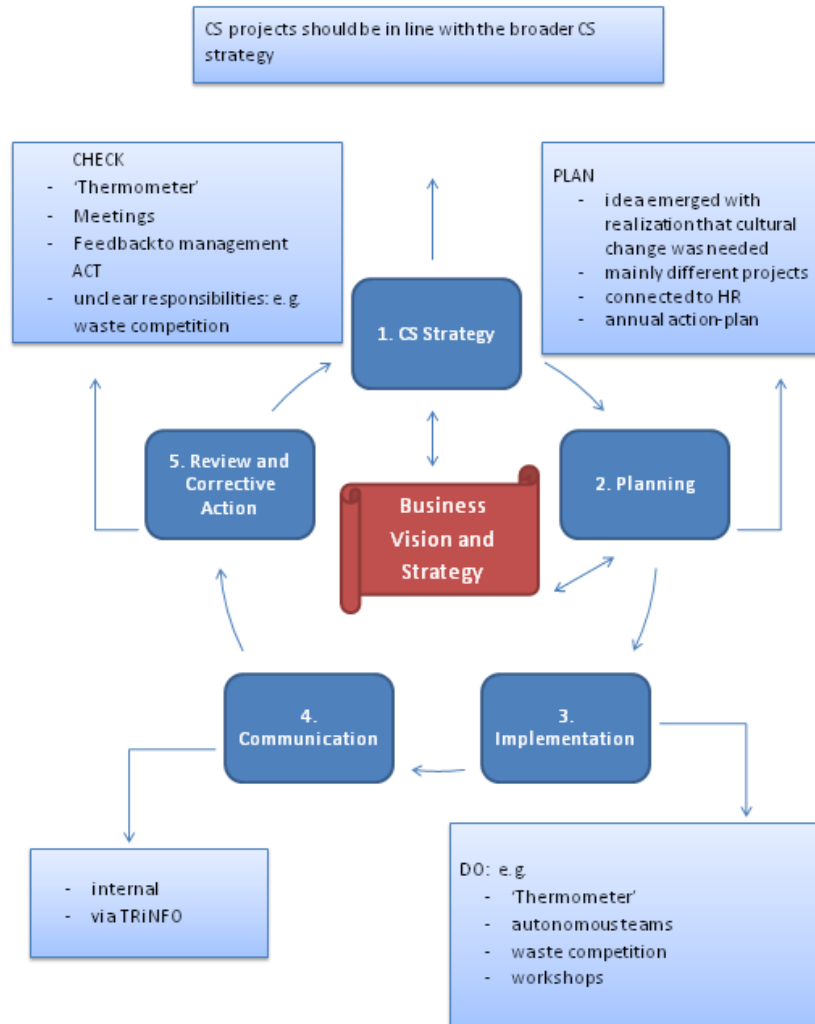


Figure 46 - Retrospective CSMS for the implementation of the *cultuurgroep*

Adapting the development of the *cultuurgroep* into the CSMS scheme reveals a number of different supporting conditions and obstacles that played a role in this change process. The *cultuurgroep* arose out of the strategic decision that cultural change needs to take place at TRI [20,26,28]. The implementation of the *cultuurgroep* projects is strongly supported by coaching and training and based on fostering employee talents and initiative (e.g. TRiNFO, 2013). Many supporting conditions for change have thus been utilized in the implementation stage. The 'architectural design features' at TRI, e.g. in relation to hierarchies, which have been identified, were perceived by the implementing actors as an obstacle to the change process [10,11,20]. The questionnaire among employees ('thermometer') allows for a check whether organisational learning and a change in culture are taking place. The *cultuurgroep* decides on and presents their annual targets in a sort of action-plan format, in how far corrective action considerations are hereby implemented remains unclear. This

may be connected to the fact that the responsibilities of the *cultuurgroep* are not understood in the same way by all actors [20].

Waste competition

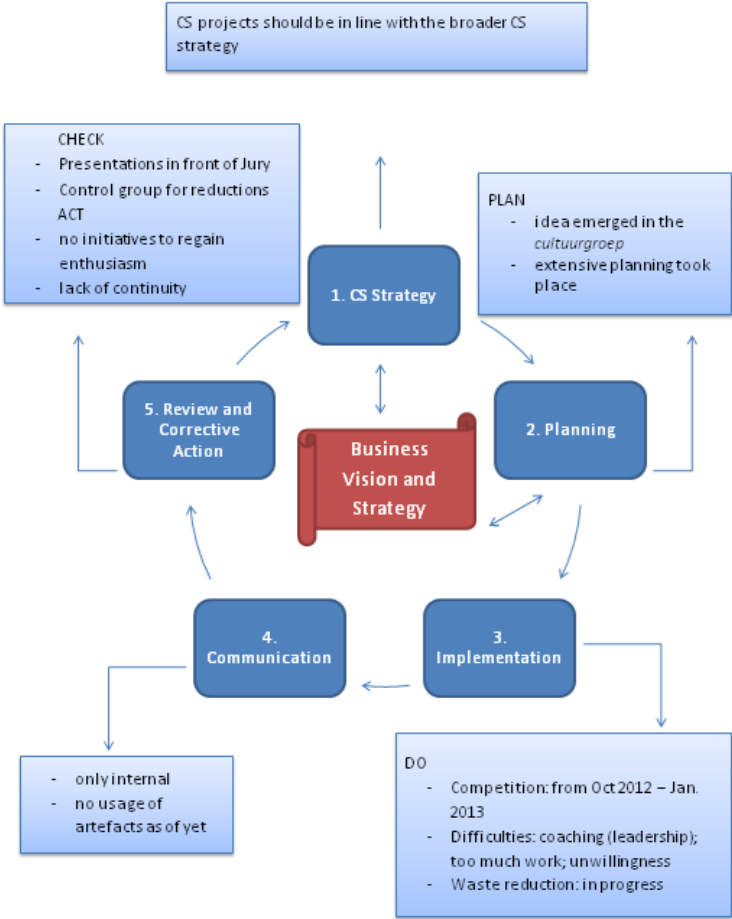


Figure 47 – Retrospective CSMS for the implementation of the waste competition

While overall, the waste competition was perceived by employees and management alike as a success [10,11,14], a short look at the implementation of the waste competition illustrates how several obstacles of change, which are especially related to individuals, complicated the implementation of projects on the floor. These are for example ‘added work’, ‘unwillingness to change’ and fear and anxiety. Lastly, the biggest concern with regards to this CSMS cycle, which was voiced by both employees and management [11,27], was that it remains without long-term results. First signs of a decrease in enthusiasm and action in the field of waste reduction point to a possibility of this concern becoming reality. It becomes clear that for this case no procedures are in place to counteract these arising problems, nor has it been achieved yet to institutionalize the changes that were derived from the waste competition, despite some amount of organisational learning that took place during the period of the competition [11,14]. If this crucial stage of the cycle is not sufficiently dealt with, the project could indeed fail to anchor organisational change. Systems thinking points to a lack of understanding the complex context of the structure in which change is aimed to take place

and as a result a lack of changes in these structures, as a reason why change cannot be manifested (Hjorth & Bagheri, 2006).

TRI CSS

The most recent efforts by TRI with regards to sustainability are aimed to develop an integrated CS vision and strategy [16,21,25,27]. The large amount of projects - small and big, isolated and interconnected, on the floor and on the management level - let to a lack of awareness by all actors of what is actually happening and to different directions being followed up [16]. Vision and strategy creation are actually the “heart” and the very beginning of the CSMS and an application of the CSMS to the TRI CSS will illustrate in how far the development at TRI follows the CSMS as developed by TRI (see section 3.3 on p.11 and repeated in Figure 48 below).

SYSTEMS APPROACH TO CORPORATE SUSTAINABILITY

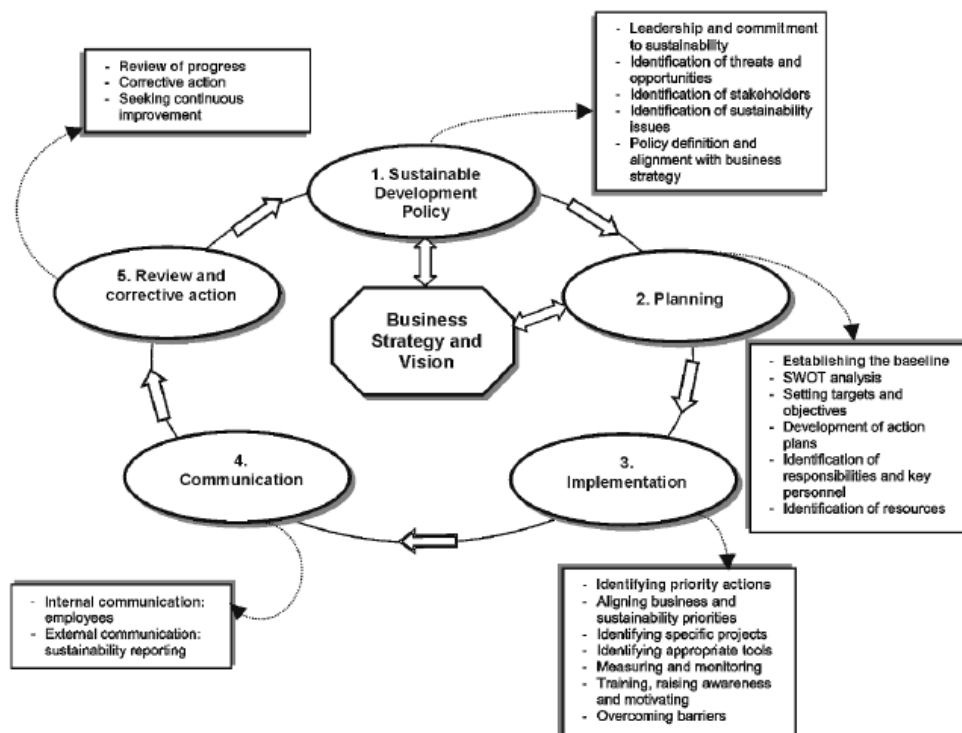


Figure 48 - CSMS scheme according to Azapagic (2003)

In the following (Figure 49) the strategy development as to date is adapted to the CSMS scheme.

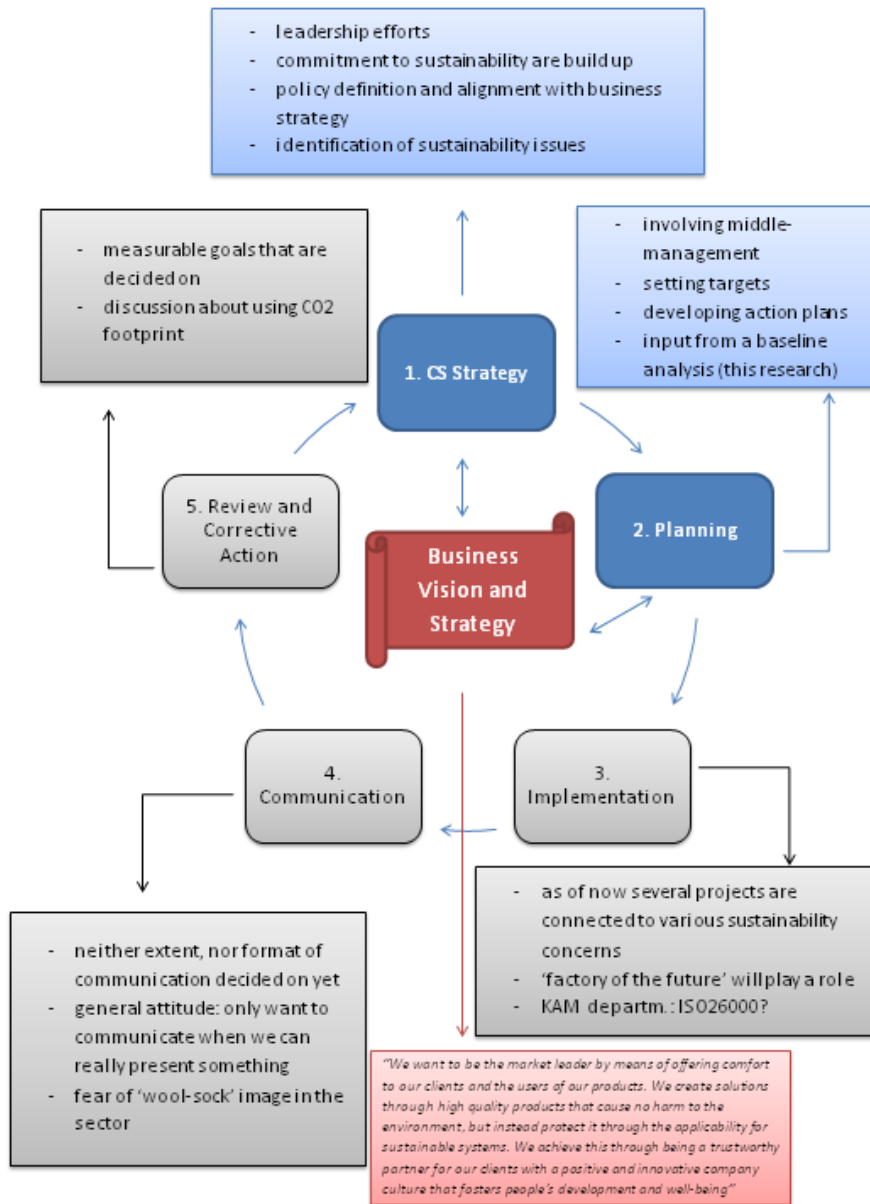


Figure 49 - TRI's CSS implementation in the CSMS scheme

One element of the strategy development stage that is advised by the CSMS scheme, but has not been done is stakeholder identification. Moreover, currently little discussion concerning threats and opportunities took place. This research serves as a way to close this gap and will also provide for a baseline and SWOT analysis as suggested by Azapagic for the planning stage (2003). The strategy draft as provided earlier showed that targets have been set. TRI is now about to define the actions to be taken in more detail. These will then have to be successfully implemented and the previous analysis pointed out a number of supporting conditions that can be made use of and obstacles that need to be paid attention to. Currently, it has not yet been clarified if and how TRI will report on its new CSS externally. There is some hesitation towards external communication as green companies in the sector may easily be labelled with a 'wool-sock' image, which is not desired [2]. With regards to the review and corrective action that will take place, the determined goals will play a role and there have been discussions about the use of a CO2 footprint tool [1,16,20]. The analysis of ISO14001,

cultuurgroep and waste competition have shown that the 'act' phase of the PDCA phase is one, where TRI still faces many difficulties and thus might require special attention.

6.3 Case discussion

6.3.1 Intention Gap in MoCSAs application to TRI – approaches that provide bridges

The application of the MoCSAs framework to TRI could already provide one useful function, it demonstrated in which CS elements gaps lie between intentions and actual state. Another application of MoCSAs as described in section 4.5 was assumed to be a discrepancy analysis that can bridge the gap between theory and practice by way of comparing the companies mapping with the mapping of approaches. Insights that the approaches provide to a certain CS element could help in practice to bridge the gap between state and intention.

TRI is already using a number of approaches partly, implicitly or explicitly. Namely, (1) the triple bottom line (■ **TBL**) through the 3Ps, which has, however, been attested to be not understood to its full extent by all actors. (2) TRI is certified according to several ISO certifications and hence possesses an environmental management system (■ **EMS**). (3) Several actors at TRI have called their approach or desired approach to sustainability CSR (■ **CSR**). (4) Usually not explicitly mentioned but observed in several actions is an eco-efficiency approach (■ **EE**) to sustainability matters. (5) Lastly, TRI has at one point in time had one short assessment of the C2C (■ **C2C**) characteristics of its product line. The comparison of the TRI current state – intention map with the approach mapping will take place with the aim of identifying elements of approaches that TRI is already more familiar with or that have not yet been considered, which could bridge the gap that TRI is currently facing between the state of things and its intentions.

Scope/Vision

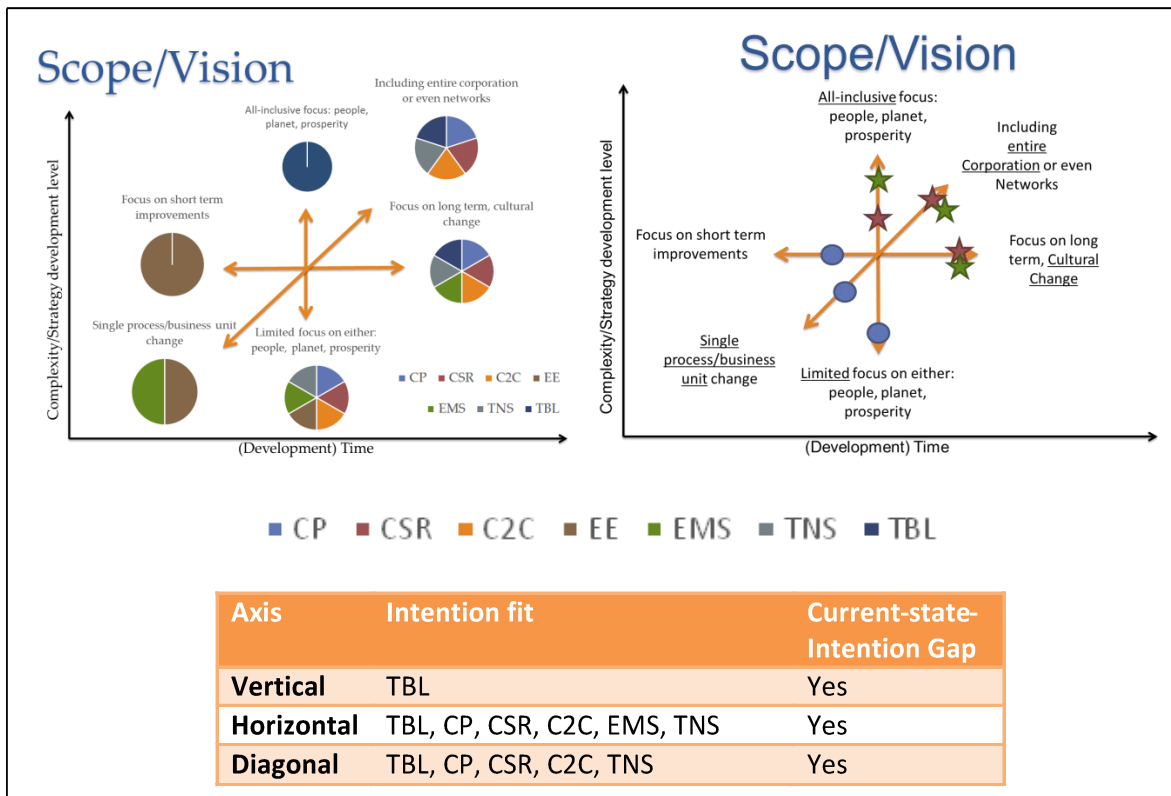


Figure 50 - MoCSAs approaches and TRI comparison, legend and 'Intention fit' table for scope and vision

An all-inclusive focus on the 3 Ps is propagated by only one approach of those that were mapped, the TBL. At TRI all interviewed actors were familiar with the concept of the 3 Ps and it was widely used to describe TRI's sustainability efforts. However, the necessity of value creation in all three levels during every decision making process as required by the TBL (Mowat, 2002, Jamali, 2006) has not yet been fully recognized. Researchers have suggested that the GRI is currently the reporting method which incorporates the TBL best (Archel et al., 2008), and its application may thus be a tool that enhances the understanding of an equal importance of all 3Ps.

TRI also aims to increase its focus on long-term as opposed to short-term goals. Many initiatives and also the CSS, which is being developed, already aim to close this gap. The mapping indicates that eco-efficiency is an approach that diverts from long-term to short-term goals. To depart from eco-efficiency thinking and focus on eco-effectiveness (Ehrenfeld, 2005), when it comes for instance to the evaluation of the energy scan and to decisions on what suggestions from it to implement, could help to reduce short-term thinking.

In the case analysis the diagonal axis of the scope/vision dimension has been linked to the importance of systems thinking for change processes in CS. As TNS is directly related to a systems perspective (Ny et al., 2006), an application of the TNS approach to the vision process may be supporting a broader perspective that allows the incorporation of the entire company into the CSS.

Why?

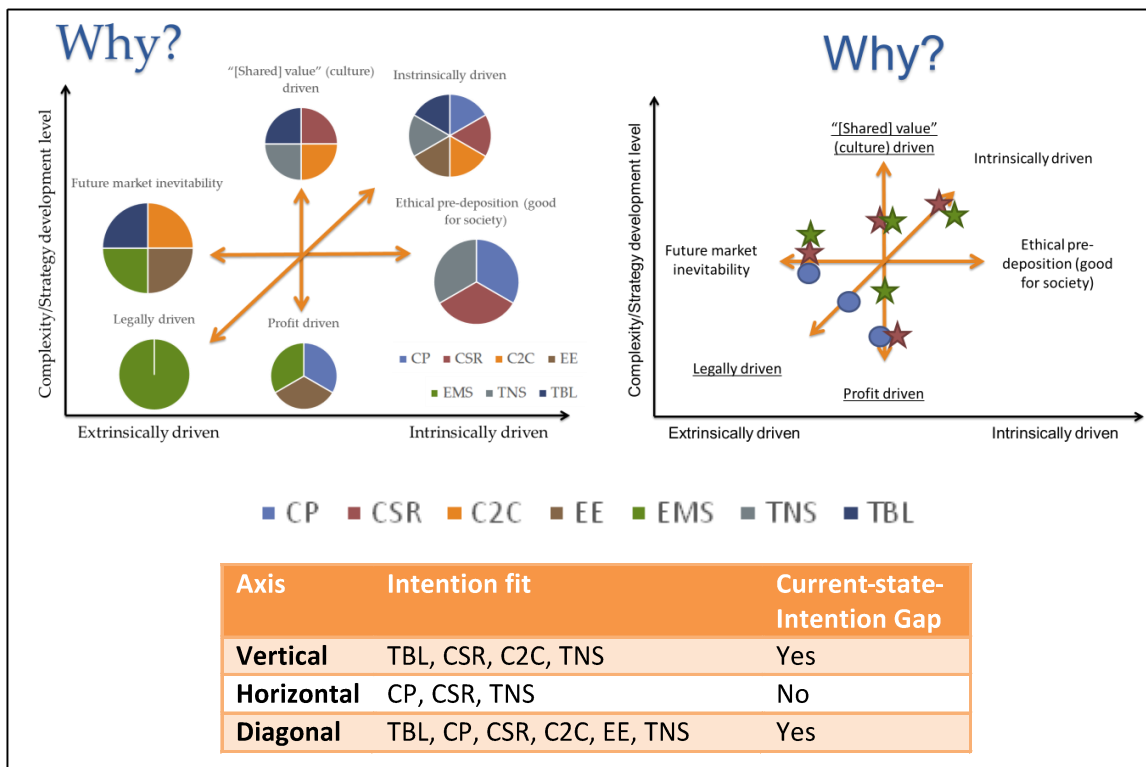


Figure 51 - MoCSAs approaches and TRI comparison, legend and 'Intention fit' table for 'Why?'

In order to add more value driven motivations to TRI's CSS approach, several theoretical approaches could help. TRI already makes a connection to TBL and CSR elements and these, e.g. in the form of the *cultuurgroep*, are applied in order to close this current-state-intention gap. An approach that TRI as of now is not yet familiar with is TNS. TNS promotes a strong value creation due to its four principles for sustainability, which call for an elimination of (1) an increase in substance extraction, (2) an increase in substance production (toxics), (4) physical degradation of nature, (5) and conditions that undermine human's capacity to meet basic needs (Robèrt, 2000; Skov, 2004). If these conditions are for instance considered at the beginning of every product development process, this can endorse a more value driven process (Aanraad, 2013). A full integration of the C2C approach could yield similar benefits, when following a process approach based on their five steps: (1) Free of ... [specific substance], (2) personal preferences, (3) the passive positive list, (4) the active positive list and (5) reinvention (McDonough & Braungart, 2001a, 2001b, 2001c; Braungart et al., 2007).

For a shift from a legally driven to an intrinsically driven approach only EMS is not a suitable approach. This emphasizes that to solely rely on the EMS system would not provide for the development towards a more intrinsic approach. However, it need to be noted that in fact while the 'origins' of TRI's sustainability approach can be seen to be connected to legal drivers, as well as motivations for the actual EMS system (ISO14001) implementation, the current driver fall more under an intrinsic characterisation.

What?

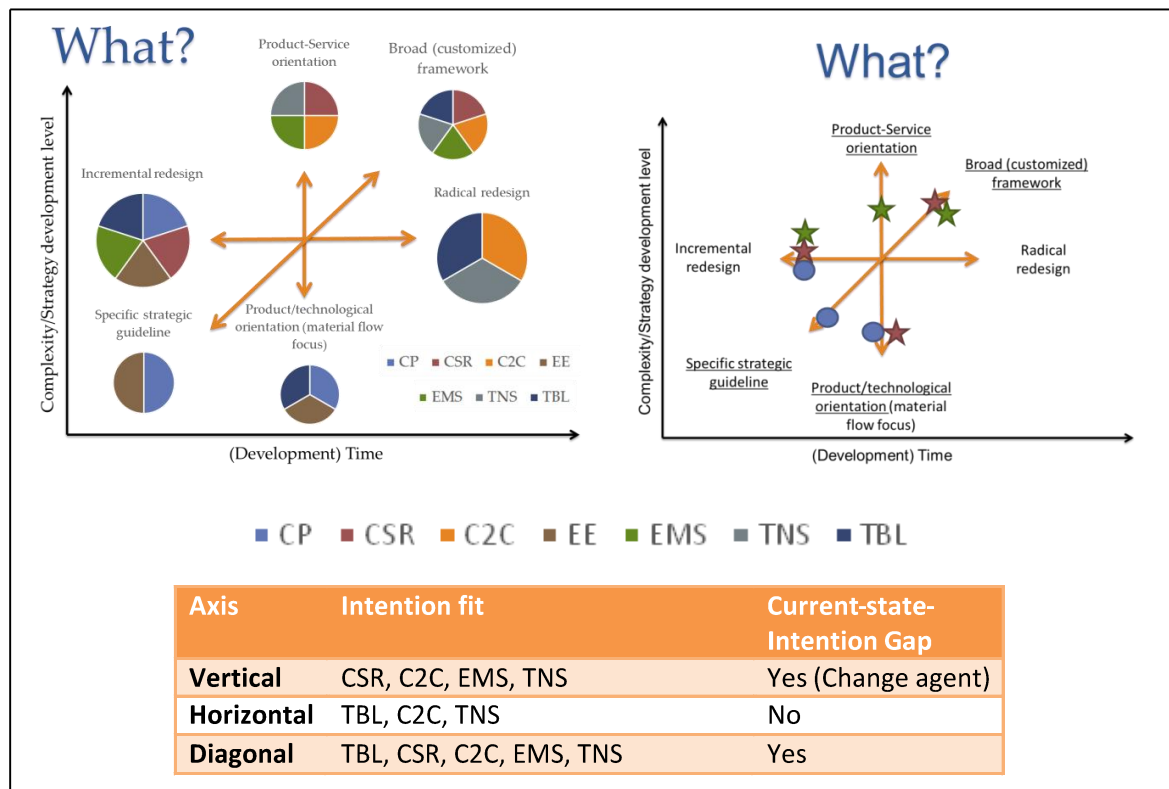


Figure 52 - MoCSAs approaches and TRI comparison, legend and 'Intention fit' table for 'What?'

The change agent and a few other actors have stated some ideas of how TRI could include taking-back policies in their business model and thereby create a product-service model [1,3]. While currently there is no intention of the management to take these on is observed, the proponents might want to develop this idea further in the future. Helpful for this could be especially C2C thinking which is based on the continuous use of materials within their technical or biological nutrient cycles (Braungart & McDonough, 2009). To keep materials in these cycles is a difficult exercise, in particular when working together with clients that are not working (e.g. recycling) according to sustainability criteria, a product-service system provides one solution for this problem.

With regards to a development from a specific guideline to a broad framework approach an obstacle of change is connected that could also be found to exist at TRI, namely 'treating symptoms not problems'. The philosophy behind TNS is particularly interesting in this regard as it clearly states to be its main aim to create awareness for thinking within cause-effect chains (Robèrt, 2000).

How?

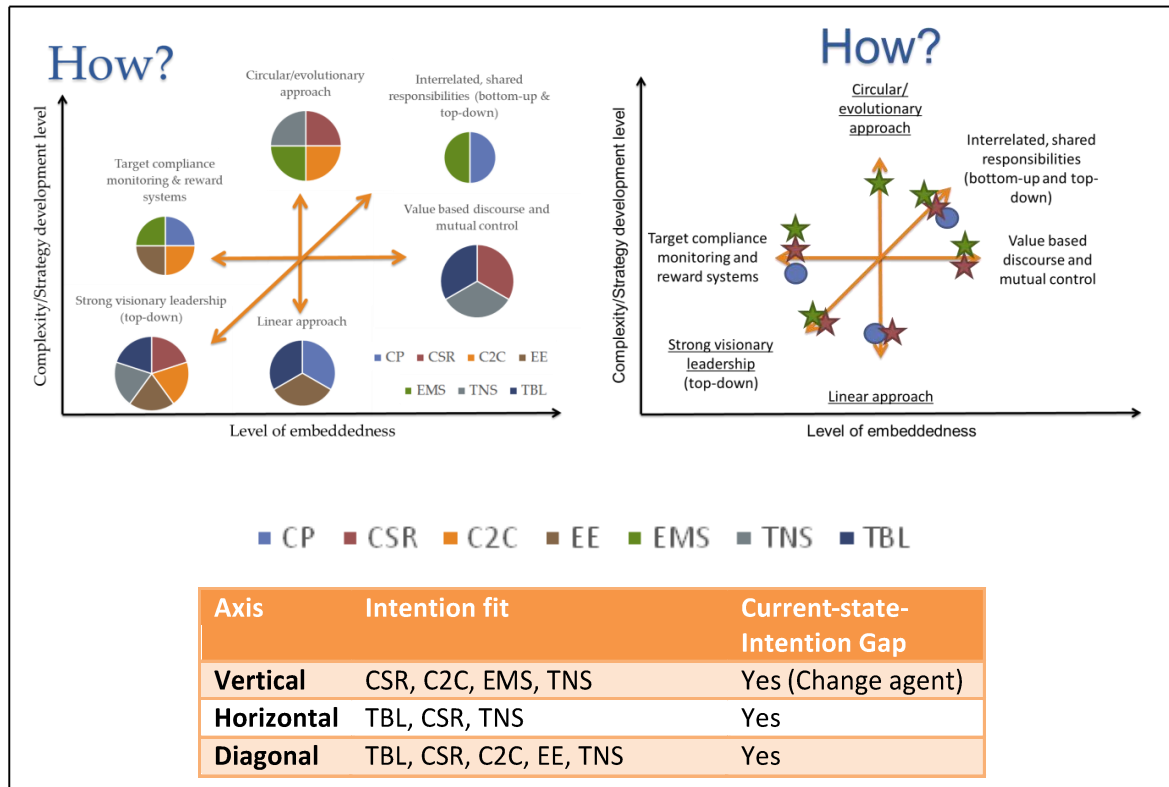


Figure 53 - MoCSAs approaches and TRI comparison, legend and 'Intention fit' table for 'How?'

In the KAM department it has been recognized that the PDCA cycle of the EMS system is often not fully applied or at least not successfully so [1,20]. A more stringent use of the EMS system by all actors in this regard could enhance an evolutionary approach at TRI. Also interesting is hereby an implementation of C2C with its typical circular thinking.

Linked to the horizontal axis of this dimension are effective management systems, which support target compliance and monitoring. Moreover, the mapping of the approaches with EMS on this side illustrates this link. Furthermore, the intention to further develop the target compliance and monitoring approach thus hints at the need for a more stringent EMS implementation. For a more value based implementation and control of the CSS, approaches that are themselves more based on a promotion via a value based discourse, can help. In particular the focus of TNS to create awareness (Robèrt, 2000), might be an advantage here.

Some CS approaches tend more towards an implementation of CS through strong leadership than through bottom-up initiatives. At TRI in particular a better coordination and structure of CS efforts are desired [3,16]. An approach in which management leadership is discussed extensively is CSR, and best-practises and guidelines developed in this framework could thus provide for insight on how to enhance this CS element (WBCSD, 1999). It is interesting that TRI is struggling with this element, as this supports the research, which has found that larger companies usually handle CS implementation more formal and strategic, whereas SMEs approaches are characterized as a more personalized, informal approach (Jenkins, 2006).

Where?

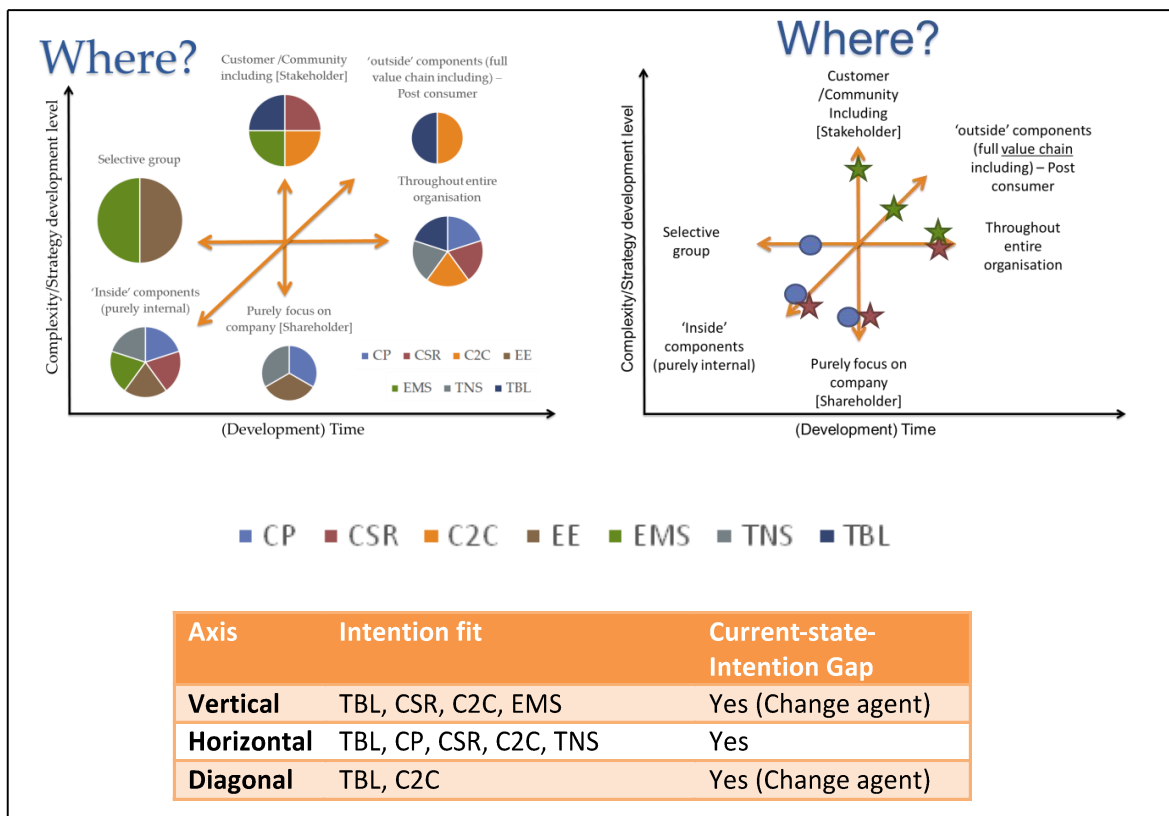


Figure 54 - MoCSAs approaches and TRI comparison, legend and 'Intention fit' table for 'Where?'

TRI's CSS is currently not explicitly directed towards external stakeholders such as society [20]. However, organisational change theory shows that stakeholder inclusion can be a supporting condition for change. The change agent recognizes this value and would like to include the community and customers more. In particular CSR, with its focus on social responsibility, promotes a strong alignment with stakeholder interests (WBCSD, 1999).

The more recent developments at TRI indicate a shift from a selective focus to an implementation aimed more at the entire organisation. This becomes evident in particular with regards to employees. A possibility to improve the scope of production and processes changes to the entire organisation provides the CP approach. The third principle of CP, the integration principle, requires a holistic view on the production cycle (Lei et al., n.d.).

Several actors have also recognized the benefits which an extension of the CS approach to the whole value chain could bring [1,3,8,20]. C2C thinking in its pure form can actually only be applied if the value chain is taken into account, due to the focus on materials, their characteristics and necessity to put them back into the nutrient cycle (McDonough & Braungart, 2001a, 2001b, 2001c). At the moment the R & D department of TRI looks into a closely related approach, life-cycle thinking [3]. The proper application of LCAs to their products will include value chain considerations.

When?

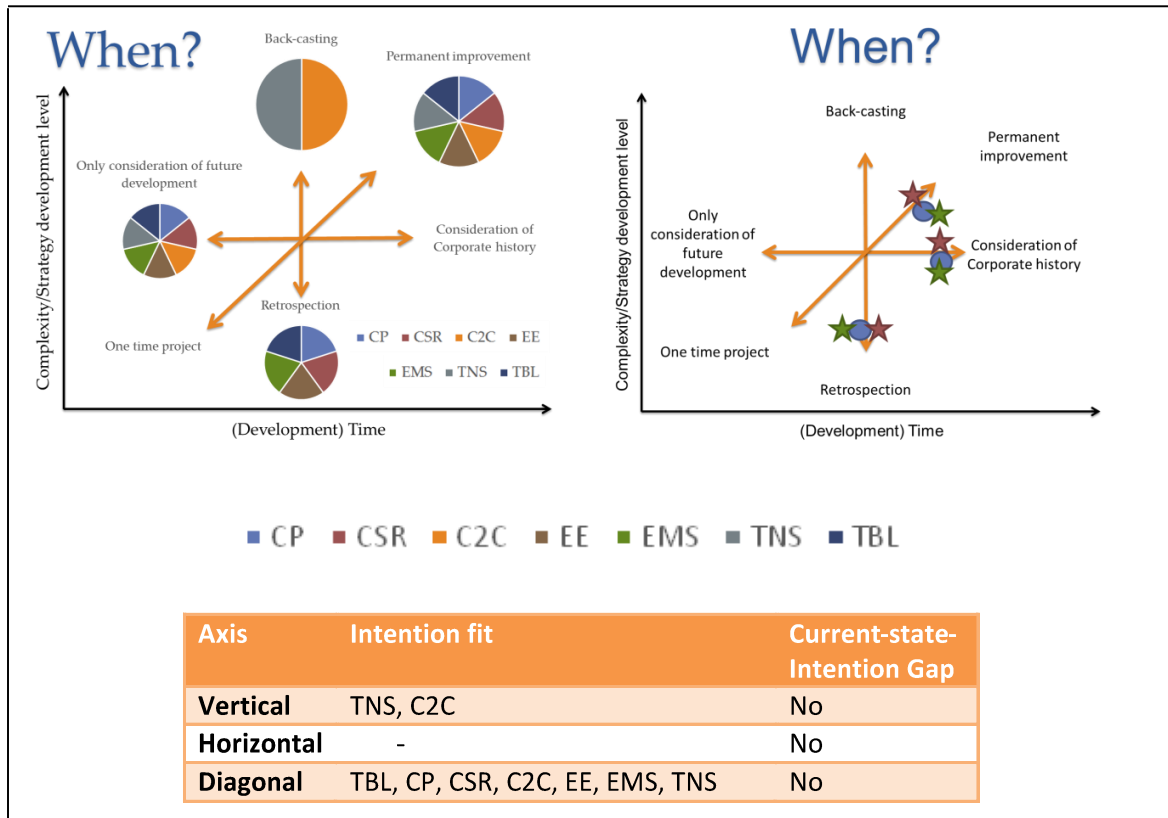


Figure 55 - MoCSAs approaches and TRI comparison, legend and 'Intention fit' table for 'When?'

The results of the MoCSAs results comparison for the 'When'-dimension yield an interesting picture, as there are no intention-gaps for TRI's CS approach and as all of the approaches on the vertical axis match TRI's intentions, whereas none of the approaches on the horizontal axis match. Due to the lack of an actual gap this dimension is, however, not further discussed.

6.3.2 Central themes revealed by the analysis

The three investigating elements of this case analysis - a gap-analysis with the help of MoCSAs, organisational change theory and the CSMS - all point to a number of conclusions that can be drawn from this in-depth case study. The past sustainability efforts at TRI can be characterized by a more pragmatic, ad hoc way of implementation, but the intention gap-analysis showed that TRI wants to depart from that. Both, organisational change, which is supported by systems thinking, and CSMS, which aims to provide a structured approach to CS management, emphasize the benefit of such a shift. Closely connected to that is the implementation of a long-term vision, which is supported by theory and currently being implemented by TRI. The analysis indicates that the vision and strategy development that is taking place at the moment can provide great value to the overall sustainability development of TRI. The CSS can help to develop the broad and structured approach that is needed. Both CSMS and organisational change theory promote stakeholder inclusion into the CSS development process. At TRI this intention was not voiced on the management level, but the matching of the gap-analysis with CS approaches revealed that a broader application of the CSR approach, as well as the adoption of an LCA approach may help to make the CSS more inclusive.

A reoccurring theme throughout the analysis is the internal social change driven by the *cultuurgroep*, who has a difficult task ahead of them due to the organisational structure, which is still based on a very stiff and hierarchical thinking, with many long-term employees that display particular resistance to change. Theory showed that to break open these old structures a better information diffusion and communication structure on the one hand and the creation of shared values on the other hand can be supportive elements. Schein's model of organisational culture is the most illustrative for the latter as it emphasizes the different value levels that need to be changed to successfully anchor organisational change. Furthermore, the case analysis confirmed that 'anchoring change' and establishing new routines is not just hampered by a lack of supporting structures, but can be greatly influenced by individual behaviours. Organisational change obstacles such as an indifference of managers towards the change goals or added work that employees experience can be seen to exert influence on the development process in the CSMS. Their influence may reach as far as divert the possibility of the current state of things to move towards the CS intention, for instance with regards to short-term thinking, or even as far as to alter intentions in themselves.

The case, however, showed at the same token what a great influence change agents can have on CSS development. The differing intentions between management and change agent, but in particular the changes of current state and intention development into the direction of the change agent's intentions, show the strong drive the change agent exhibits. 'Political astuteness' (Chakrabarti, 1974), thus the ability to communicate the issue and ideas at hand to others, was observed and can be a link in the chain of information diffusion throughout the company. Moreover, also the CSMS application to the change projects at TRI revealed the change agent's role for planning and implementation.

Overall, it became apparent that the last stage, which makes the CSMS-cycle round, is the most problematic at TRI. The 'act' dimension, in which previous results need to be gathered and analysed in order to make an informed decision about aspects of a CS project or programme that need to be changed, is often still neglected. The gap-analysis and the matching with organisational change obstacles provide insights on why difficulties arise at this stage. MoCSAs revealed that linear thinking still predominates processes; and organisational change theory could expose that for instance a tendency to treat symptoms instead of problems abets this. The role which systems thinking could play to overcome these obstacles has been indicated by organisational change and learning theory, the CSMS and can also be found in for instance the TNS approach. The analysis thus points to a number of possibilities on how to integrate systems thinking into the CSS.

6.3.3 Change Management SWOT Analysis

The findings can be combined in a SWOT analysis (see Figure 56). A better overview of the findings is given by way of structuring the supporting conditions for and the obstacles to change, which were previously identified, according to strengths, opportunities, weaknesses and threats to the change process.



Figure 56 - Change management SWOT analysis for TRI

Moreover, a number of insights from the other theories such as the problems with the 'act' dimension were included in the SWOT analysis to present a full picture of TRI's CSS implementation process. While TRI already has and applies a number of strengths, the long lists of opportunities shows that there are a number of elements, which already exist, but can be improved, for instance the quality management system or long-term investments. Furthermore, there are many conditions supporting organisational change, such as organisational learning and systems thinking, which could be introduced at TRI to support the change process. To implement these might also help to deal with problems (weaknesses) TRI is currently still facing such as anchoring the change processes, which take place, into the company's routines. The 'threats' area, lastly, points at a number of factors, among which a great amount of individual factors that are currently still hampering the change processes. To pay special attention to these and to further minimize them, for instance through

coaching, which already takes place, or through a stronger base of shared sustainability values which is listed among the opportunities, can ensure that the change processes will take place and can be maintained.

6.3.4 Reflections on the Methodology

While the change management theory as well as the CSMS were based on a literature review of other extensive research, this study also introduced a new methodology: MoCSAs. The application of the MoCSAs methodology to the case analysis has revealed a number of weak points of its current version. The organisational change management theory, as well as the CS management *system* have both highlighted the importance of systems thinking for a CS change process. In the MoCSAs methodology, however, this is only represented by the weaker 'evolutionary' thinking vs. linear thinking axis. In the future an integration of systems thinking into the dimension is thus recommended.

Another problem became apparent when mapping TRI in the 'when'-dimension. The horizontal axis (only consideration of future development vs. consideration of corporate history) is actually linked to much more than just company history in the sense of 'what happened in the past?', it is also connected to the organisational architecture that arose out of such past developments, which has become clear through the timeline analysis of TRI. These organisational features are to some extent incorporated in other axes as the link to the supporting conditions for and obstacles to organisational change showed, for instance in the 'how' bottom-up vs. top-down axis. Nevertheless, due to its strong appearance in the change management theory a more explicit integration may be beneficial. The horizontal axis of the 'where'-dimension (selective group vs. throughout entire organisation) repeats to some extent the diagonal axis of the scope/vision-dimension (single business unit vs. including entire corporation). While the latter describes more an intention of the CSS implementation, the former refers to the actual implementation. In a current state-intention-gap-analysis, however, this differentiation is also made in both dimensions within the mapping itself.

Moreover, the mapping of a company, which is followed in a longitudinal case study, is difficult as the researcher has to pinpoint to a certain point on an axis, while actually a development over time has been observed. A repeated mapping at the beginning and the end (or possible steps in between) might thus provide a better picture of the change process. However, in general the mapping leaves little room for differentiation. Also the 'why'-dimension entails a difficulty for a 'current state' mapping as the question posed for the horizontal (future market vs. ethical predisposition), as well as the diagonal (legally driven vs. intrinsically driven) axis, ask for whether the approach "has developed" or "originated" in either of those motivations. The earliest origins of a CSS may however be traced decades back, for instance to the regulation tightening in the 1970s.

The biggest problem with MoCSAs, which was revealed, is however the normative value statement it conveys. In most cases one end of the axis is perceived as preferable by the person who is carrying out the mapping. In some cases these may differ according to background and personal values of this person (e.g. incremental vs. radical redesign), in other cases sustainability approaches strongly propagate one or the other, for instance a permanent improvement over a one-time project. Even if there are CS approaches to be found on both sides of an axis, there might still be a normative preference by society for one e.g. a shared value driven approach over a profit-driven approach. Lastly, organisational change theory and CSMS in some cases strongly promote one end of the axis over the other for instance when it comes to a linear vs. an evolutionary approach. This last

possibility exerts a less normatively-based authority as it is based on extensive literature and case study research, which has taken place in both fields. Therefore, further research into how organisational change and CSMS thinking could actually offer a more objective reasoning for which axis-ends are desirable to achieve, when trying to foster CS.

The mapping of the seven CS approaches has already shown that due to their very different basic principles and values they do not serve as a one-size-fits-all-solution, nor do they all support organisational change management with the same elements or to the same extent. Whether a refined MoCSAs methodology could help to provide further insights into the role of organisational change management in the various CS approaches is also an interesting question to consider in future research. In the methodology development seven sample approaches have been mapped, however, in reality a much larger number exists and if one wants to compare the company mapping with those of existent approaches there is no justification, of why one would be included and another not. If too many approaches that are actually close to what is observed at the company are used, this might lead to a lack of new ideas and different thinking which the analysis aims to provide. Whereas, the other way around the company might not be able to identify with any approach and incorporate elements thereof in their business practice.

For this case study only two of the five suggested usages of MoCSAs, namely (2) a gap analysis and (5) a discrepancy between theory and practice analysis, have been applied. Therefore, no statements can be made as of yet with regards to the other application possibilities for MoCSAs. Despite the various problems that were revealed in the application of MoCSAs, the value of linking the methodology to organisational change management, CSMS and systems thinking, has become apparent. By way of integrating the different theories through various analysis tools, the analysis could take place on a very in-depth level and enabled to gain an idea of what priorities should be.

7. Research Limitations and Further Research

In the following it will be acknowledged that this research was subject to a number of limitations. The most important concerns are related to the choice of a case study as a way of analysing the theoretical framework empirically. The greatest limitation of case studies is that they are not always scientifically generalizable (Yin, 2009). This problem increased due to the choice to conduct only one case study. Moreover, the case study undertaken in this research provided qualitative data, which is hard to compare and can suffer researcher biases.

In the methodology section some of the potential dangers of researcher bias in participant observation were elaborated on. One of them was the danger of building closer relationships with some people in the group than others (Gomm, 2008), which has indeed taken place in a number of cases and most prominently with the environmental manager, who has been identified as one of the change agents at the company. Therefore, his opinions could also not be considered typical for the company, which has been recognized and dealt with by for instance mapping his intentions separately. Being aware of potential biases, the research analysis has been strongly scrutinized regarding this aspect, but it can nevertheless, not be fully assured that this connection-bias was fully eliminated. Moreover, while the case study was longitudinal it did refer to events, which have happened before the research period and it may be that due to this retrospection some details were not revealed.

A number of further research suggestions have been made throughout the paper. The two main recommendations, however, refer to (1) the MoCSAs methodology and (2) systems thinking. A further development of MoCSAs to minimize its disadvantages and a further application of the methodology to expose more usages as well as possible problems would be desired. This research integrated a large number of theories in order to gain a systems perspective on change processes. This holistic view has enabled a better and deeper understanding of the underlying processes and challenges and a further application on such a perspective on corporate sustainability is considered to be beneficial. Many topic areas that are connected to CS could, however, not be dealt with despite of the holistic methodology approach. Motivational drivers for CS, reporting about CS activities and the use of CS tools are such topics. Furthermore, while the analysis revealed the positive as well as problematic sites of the current CS development at the case company no clear evaluation of the strategy, which could for example be used for benchmarking or the comparison to other cases was done. More research that includes other aspects of CS is therefore also recommended.

Overall, the case study has shown that an assessment of the current approach as well as management intentions, as provided through the help of the developed mapping methodology, can help to identify gaps and critical issues and to provide an overview about where the CSS is heading and where inconsistencies may lie. This assessment is of a normative and qualitative nature and thus provides little basis for generalization or benchmarking, but due to its qualitative nature it can be used very well in combination with an analysis of change management processes at the company in question that can provide support in understanding how CS change can be dealt with in order to become ingrained into organisational culture.

8. Conclusions

Pressures to incorporate environmental and social concerns into business thinking are increasing and the terms 'corporate social responsibility' and 'corporate sustainability' have long become buzz words. In line with that the academic world has brought out a great number of corporate sustainability approaches that aim to provide direction by describing how to deal with the challenges of such an ambitious change process. However, as of now CSS implementation has not become a success story and especially not for SMEs. Reasons to be found for this are many, among them motivational drivers and contextual factors, but it has been attested that company culture and a change of this culture present a particular complex part of this process. In the past these internal processes have often been treated as 'blackboxes'. The in-depth case study analysis of this research was designed to open up this 'blackbox' for one particular company and reveal how a change process in a company comes about, how it is influenced and how sustainability performance might be improved.

For this it was decided to look into the CSS implementations of an SME, since this is a research field that has not yet received enough attention. The case could confirm the research that has found that SMEs typically do not apply theoretical CS approaches as provided by academia, nor fully comprehend these. Moreover, it could be established that a personalized style of management, in connection with a refrainment from using specific CS approaches strategically, can be a factor that hinder CSS implementation at SMEs. That is as a pragmatic and ad hoc CS implementation does not go along with systems thinking and the development of supporting organisational structures, both of which have been attested as vital to foster organisational change and for establishing a round CS management system. Another differentiating SME characteristic is that they are less influenced in their CS implementation by external factors, which could also be observed in the case study, where this was even more amplified due to the company's supply chain situation as a B2B company. This has consequences in particular with regards to the motivation of why a CS approach is being implemented and to the stakeholder inclusion, which are both important themes in theoretical CS approaches. Some of the key challenges attributed to SME CS implementation were embedding a CSR culture, lack of information and support and maintaining the momentum of activities, all of which could be confirmed and related to organisational change management processes. At the same time, SMEs are also considered to be more adaptive, which means that supporting conditions for change may be created more easily.

Since only one case study was conducted a generalization of the findings needs to be regarded carefully. However, with the help of the MoCSAs methodology, organisational culture and change theory and the CSMS, it could be established that a successful CSS implementation is strongly determined by the ability of a company to change organisational culture. It was shown that the difference between clean cut sustainability approaches in theory and CS approaches, as applied by companies in practice, can be big. Moreover, the sustainability approaches provided by theory often fail to clearly address matters of cultural change and in particular the obstacles that may arise. This research illustrates that it is of great importance to create possibilities to connect theoretical knowledge more efficiently and useful to practical experiences with the implementation of CSS. Establishing such links and opening up the 'blackbox', in which the sustainability change processes take place, can contribute to reduce the confusion that is currently still present when it comes to corporate sustainability implementation.

Due to the complexity of an organisational structure such as of an SME, with its employees, routines, values and decision making process, a systems view on the CS implementation and change processes was taken. The usefulness of systems thinking for sustainability has been endorsed in the past, because of the complex, interdisciplinary and interconnected subject matter. This research showed that systems thinking can also be applied to the integration of the theories that are concerned with CS implementation, namely, organisational change management, CSMS theory and theoretical CS approaches. Moreover, the results of the analysis show that such an integration contains added value with regards to the depth of understanding that can be derived about change processes, management, obstacles as well as supporting conditions that take place in a company. These results could be translated to a hands-on management tool in form of a SWOT analysis to be applied to improve the change process, and thereby bridge the gap between theory and practice.

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Appendix

A - List of Meetings

#	Subject Matter ⁵⁹	With	Date
1	Interview	Director Quality Management Also present: Environmental Manager (Peter Stroucken) Quality Engineer	03.12.12
2	Interview	General Director (Kees Verspaandonk)	04.12.12
3	Interview	Project Manager	04.12.12
4	Interview	Innovation Manager	05.12.12
5	Interview	Operations Director	05.12.12
6	Interview	Chief Financial Officer	06.12.12
7	Interview	External Consultant Mariska van Dalen (Tebodin)	10.12.12
8	Interview	Purchasing Manager	10.12.12
9	Department meeting	Operations Department	13.12.12
10	Waste Competition Jury Day – Part 1: Cultuurgroep feedback	Jury: General Director (Kees Verspaandonk) Mariska van Dalen (Tebodin) Project Manager Van Gansewinkel Groep Chief Executive Officer Observers (supervised the groups) All members of the <i>cultuurgroep</i> : Operations Director, Environmental Manager, HR Manager, Management Assistant, Manager Maintenance and Process Engineering, Tooling Engineer) 2 External consultants (Focus: Team Coaching)	09.01.13
11	Waste Competition Jury Day – Part 2: Presentations and Jury decision	Jury: General Director (Kees Verspaandonk) Mariska van Dalen (Tebodin) Project Manager Van Gansewinkel Groep Chief Executive Officer Observer (Operations Director) 6 waste competition teams presenting their results	09.01.13
12	Interview	R & D director	16.01.13
13	KAM department meeting	KAM department	22.01.13
14	New Year's Reception: Waste competition Finalists	Final presentations, info stands and final decision of competition winner	18.01.13
15	ISO 14001 Audit	Auditor from Lloyd's Environmental Manager	30.01.13

⁵⁹ The interviews were conducted in a semi-open or open-ended manner and the record of these is mostly based on not taking, therefore no transcripts will be provided. Annex B, however, presents the discussion points that were used for the interviews 1,2,3,4,5,6 and 8.

		Operations Director Session with Quality Management Session with HRM Session with Oppervlaktebehandeling Session with Gereedschapmakerij	
16	Presentation of corporate sustainability vision/strategy process	Presentation of preliminary result results to the management team of TRI	04.02.13
17	Company visit by Utrecht University Professor and PhD candidate	Meeting with environmental manager Peter Stroucken, Prof.Vermeulen, Sjors Witjes (MSc); including a lunch with the general director (Kees Verspaandonk)	22.02.13
18	KAM department meeting	KAM department	26.02.13
19	Interview with Tebodin consultant regarding ISO14001 implementation	Meeting with Tebodin consultant Mariska van Dalen	26.02.13
20	Interview	Environmental Manager (Peter Stroucken)	27.02.13
21	CSS Meeting	With general director (Kees Verspaandonk) Discussion about the CS vision draft	20.03.13
22	Relationweb Meeting	Meeting with an external consultant and the whole KAM department to discuss relations and communication of the KAM department with other departments	08.04.13
23	Lunch with general director and 5 other employees	Lunch event which is meant to provide employees with an opportunity to talk to members of the board of directors	16.04.13
24	KAM department meeting	KAM department	23.04.13
25	CSS meeting	Meeting with general director to discuss sustainability vision	23.04.13
26	Feedback talks	Talk with Environmental Manager	28.05.13
27	Concluding Meeting	General director and environmental manager	29.05.13

B - Discussion Points

The following discussion points were used as guidance for the interviews no.1-8 and 11. They were not always all discussed, nor did their mentioning take place in the presented order.

- function, role of department
- understanding of sustainability, PPP, MVO
- what has been done already?
- Motivations
- Stakeholders; suppliers, competitors, consumers -> supply chain
- Reporting
- Topic areas:
 - o Energy
 - o Transport
 - o Packaging

- Materials/Chemicals
 - Resource Scarcity
 - Emissions
 - Employees
 - Behaviour
- in 10 years?

C - Social Dimension Cultuurgroep Questionnaire

Vragen	Totaal 2011	Gemiddelde jaar 2012	1 ^e kwartaal 2013
1. Weet de directie wat er leeft onder het personeel?	40%	50%	74%
2. Heb je het gevoel dat iedereen mag meedenken, initiatief nemen en ideeën mag uitwerken?	85%	90,5%	94%
3. Durven we elkaar (leidinggevenden en collega's) te zeggen wat beter zou kunnen?	74%	80,2%	91%
4. Is Thomas Regout goed bezig met de toekomst?	79%	83,9%	87%

D - Vision TRI in Dutch

Visie duurzaam ondernemen

Wij willen marktleider zijn door comfort te bieden aan onze klanten en gebruikers van onze producten. We creëren oplossingen met producten van hoge kwaliteit, die het milieu niet belasten, maar in plaats daarvan ontzien door de toepasbaarheid in duurzame systemen. We bereiken dit door een betrouwbare partner voor onze klanten te zijn met een positieve, innovatieve bedrijfscultuur die welzijn en ontwikkeling van mensen nastreeft.

Doelstellingen:

- 15% minder energieverbruik in 2020,
- 30% minder afval in 2015,
- Creëren van een open ondernemende cultuur en behoren tot de top 5 van de meest attractieve werkgevers in de regio.

