

Master thesis Sustainable Business and Innovation

Identifying change agents for sustainability

Corporate sustainability integration at RIVM

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Summary

Change agents can have a significant influence on corporate sustainability (CS) integration, however, their influence, specifically the influence of their worldview has not been thoroughly investigated yet. The purpose of this thesis was therefore to investigate this influence on the success of corporate sustainability integration. To substantiate this, other factors influencing the integration success (e.g. management commitment) were also taken into account. Three case studies were performed to see if there was a relationship between the involved change agent's worldview, the other factors and the integration success. This analysis was done on the basis of secondary data, consulted documents, conversations with employees and by interviews with and questionnaires about the change agent worldviews. The research findings indicated that, overall, the identified change agents show different worldviews and that the specific cases were also influenced by factors other than the change agent worldview. Findings did not point to (a) specific worldview(s) contributing to the success of CS integration, but general assumptions could be made on which *type* of integration process and which *part* of the integration process requires which type of worldview in a change agent. This research was the first to link the concepts of worldviews, CS integration and other factors influencing the integration process and to develop and implement the method of this study.

Key words: corporate sustainability, organizational culture, change agent, sustainability leadership, worldviews.

Introduction

Background of the research and problem definition

Corporate sustainability assumes a connection between the economic, environmental and social responsibilities of organizations, also known as People, Planet, Profit (3P's), or the triple bottom line (Van der Heijden, Cramer & Driessen, 2012). The interpretation of CS differs among public and private organizations, since they differ in reason of existence and are regulated by different structures (Russell, Haigh & Griffiths, 2007). Increasingly, companies, governments, academics and change agents are becoming interested in the field of CS while at the same time human pressure on the environment is creating the urgency for CS (Benn, Dunphy & Griffiths, 2014).

Linnenluecke & Griffiths (2010) argue that organizations are in need of a change in organizational culture to become more sustainability oriented. Changing an organization requires actors who are able to understand the organization, its problems and how to tackle them, called change agents (Van der Heijden et al., 2012) or '*handpicked leaders*' (Arrata, Despierre & Kumra, 2007). Change agents or leaders can have a large influence in incorporating change into the organizational culture (Hatch & Cunliffe, 2006), however, this necessitates them to have an understanding of basic assumptions of the organizational culture (Schein, 2010). According to Schneider & Shrivastava (1988), basic assumptions have to be derived from people's behavior, beliefs and values and inherent to these are the ways people view themselves and the world around them. How people view the world around them, or their worldview, explains their visible behaviors and determines how they perceive and interact with their surroundings (Ripberger, Gupta, Silva & Jenkins-Smith, 2014). Thus, worldviews *per se* are not visible but are implicit to the way people express themselves (McEwen & Schmidt, 2007). According to Van Opstal & Hugé (2013), worldviews can be seen as a foundation on which people decide how to act, however, their influence on sustainable development and by extension CS has not been thoroughly investigated yet. Developmental psychologists consider people's worldviews in stages of consciousness development or dominant ways of thinking, ranging from pre-conventional to post conventional (among others Cook-Greuter, 2004). Research on how the different worldviews influence someone's leadership success, shows that post-conventional worldviews are more often linked to successful leadership in organizational change than (pre)conventional worldviews (among others Rooke & Torbert, 2005; Boiral et

al., 2009; Brown, 2012). Though leadership is one determinant of the success of CS integration, content, process and context related factors such as the type of change, collaboration and levels of expertise also play a role (e.g. Stelzer & Mellis, 1998).

Research objective and relevance

Researches in a Dutch public organization (Kuipers et al., 2014; Van Denzel, 2016) have made clear that, though several initiatives for CS have been implemented, it is not fully integrated in the organization. The importance of change agents for the success of this integration process is often overlooked (Arrata, Despierre & Kumra, 2007). Research has been performed on change agent or leader's characteristics, skills (among others Nikolaou et al., 2007; Gilley, Dixon & Gilley, 2008) and roles (among others Coplin, Merget & Bourdeaux, 2002; Lunenburg, 2010) and how these influence the process of organizational change. However, what sets change agents or leaders apart are not so much their personality characteristics, but their worldview or stage of consciousness development (Hunter, Lewis & Ritter-Gooder, 2014; Schein, 2015). Current research lacks specific information on the process of identifying these change agents. This research will therefore focus on both the selection process of the change agent or leader and his or her worldview. Linking both this worldview as well as other factors influencing CS integration to its level of success will provide insight in the relation between the change agent's worldview and the success of CS integration.

Central research questions and sub questions

The following main question has been composed: Which worldviews of change agents for corporate sustainability contribute to the success of corporate sustainability integration? To help answer this question, the following sub questions have been drafted:

Sub question 1: What is the context of CS integration in the case study organization and which individuals can be identified as change agents within this context?

Sub question 2: Which worldviews can be identified among the change agents in the case study organization?

Sub question 3: Which factors other than the change agent's worldview play a role in the success of CS integration in the case study organization?

Sub question 4: To what extent do the change agent's worldviews and to what extent do the other factors determine the success of CS integration in the case study organization?

1. Theoretical framework

1.1. Corporate sustainability integration and cultural change

Corporate sustainability or corporate social responsibility comprises a company's voluntary actions, which show the incorporation of social and environmental concerns in both business processes and cooperation with stakeholders (Van Marrewijk & Werre, 2003). Based on the often used Brundtland Report definition of sustainable development, Baumgartner (2009, p. 2) refers to corporate sustainability as *'the adoption of business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future'*. Benn et al. (2014) argue that traditional forms of organizations are not sustainable and need to be reshaped for the organization to contribute to the sustainability of society and the planet. Integrating CS is seen as this necessary reshaping of the organization in that it both contributes to the sustainable development of the organization as well as to the sustainable development of the wider economy and society according to Schaltegger & Burritt (2005).

Witjes, Vermeulen & Cramer (2014) argue that companies increasingly acknowledge the importance of CS, but integrating it in the core business activities poses a challenge. They further mention that the development of CS initiatives in isolation of these activities results in a gap between the company's vision and practice (ibid). In order to assess this gap, Witjes (2013) developed a framework called Leapfrocs. By assessing data from the past ten years, the framework can be used to measure the extent to which corporate sustainability is integrated in an organization. The framework uses three different existing models; the organizational pyramid (Witjes, 2013), the pyramid of organizational culture by Schein (2010) and the PDCA cycle by Deming (see Moen & Norman, 2006). In short, the organizational pyramid divides the organization into three different levels: the strategic level (where the sustainability performance is analyzed), the tactical level (where management decisions are taken and actions are performed) and the operational level (where these decisions are executed). The organization is characterized by a certain culture, which is divided into artifacts (the visible structures of the organization), values and beliefs (what people think ought to be) and basic assumptions (Schein, 2010). The latter can be explained as the *"unconscious, taken-for-granted beliefs, perceptions, thoughts, and feelings (ultimate source of values and action)"* (Schein, 2010, p. 26). Finally, the PDCA cycle of Deming visualizes an ongoing cycle of four steps;

Plan (plan the necessary change), Do (implement the processes for this change), Check (monitoring, evaluating and learning) and Act (take action on what has been learned). According to Van Denzel (2016), the framework reflects a pattern of organizational learning. For example, if strategically a planning is made but its actions are not evaluated or acted upon, this indicates that those with a strategic position do not have insights in what is happening in other organizational levels (ibid). Besides these three models, Leapfrocs includes the four dimensions of sustainability, people, planet, prosperity and time. These dimensions reflect that CS implies balancing the social, environmental and economic aspects of corporations (Hammond, 2006) thereby taking into account a short,- long,- and longer term perspective (Lozano & Huisingh, 2011). The time dimension in Leapfrocs specifically relates to the scope of time in which the item has played a role in the organization, either past, present and / or future. In each organizational level, taking into account the four dimensions of sustainability, an analysis is performed on the steps of the PDCA cycle and on the cultural levels of Schein (2010). *Figure 1* visualizes the main elements of the Leapfrocs framework.

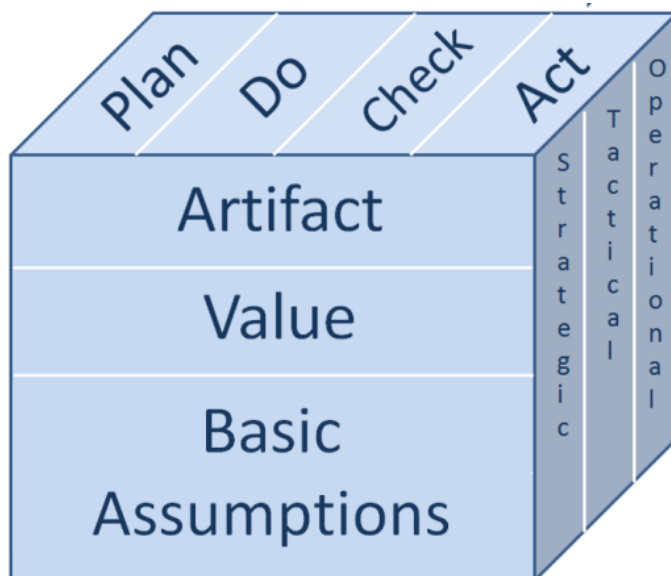


Figure 1 Leapfrocs framework (Witjes, 2013).

By use of Leapfrocs, the process of CS integration is operationalized by separate elements showing subparts of the entire integration process. These elements, or integration items, can be divided in four categories; *thought* (or opinion of employees), *activity* (what is happening in the organization), *interaction* (an

interplay between two parties is taking place) and *result* (something that can be described as established; no action is taking place with respect to it) (Pannatier, 2014; Kuiper et al., 2014). All four categories of integration items show to what extent corporate sustainability is integrated in the organizational culture (Kuiper et al., 2014).

An organization's culture expresses the shared pattern of beliefs or values of its members (Smirchich, 1983). These shared values and beliefs guide organizational behavior (Lumby & Foskett, 2008; Sathe, 1983) by providing organizational members with a consistent set of basic assumptions (Sathe, 1983). Via a process called cognitive transformation, values and beliefs transform to shared values and beliefs and can ultimately become shared basic assumptions (Baumgartner, 2009). This cognitive transformation takes place if the values and beliefs that have developed over time, have proven to be successful and are therefore considered by the group as legitimate (Baumgartner, 2009; Schein, 1984). This is called a pattern of *effective* basic assumptions and this pattern is what constitutes a culture (Schein, 1984).

According to Baumgartner (2009), sustainability activities need to be integrated in the organizational culture for them to be successful. Thus, corporate sustainability needs to be integrated into the organizational culture, which more specifically requires a *change* in organizational culture (e.g. Schneider, Brief & Guzzo, 1996; Benn, Dunphy & Griffiths, 2006; Baumgartner, 2009; Linnenluecke & Griffiths, 2010). According to Schein (2010), changing the culture of an organization requires one to understand its values and shared basic assumptions. Indeed, successful integration of CS seems to be for a large part dependent on these values and basic assumptions, which in turn influence how CS is integrated (Linnenluecke & Griffiths, 2010). While values can be agreed or disagreed upon, basic assumptions are embedded in the organization in such a way that these are taken for granted by its members and as a result tend to be *non-debateable* as well as *non-confrontable* (Schein, 2010). For this reason and since organizational members appreciate the stability, meaning and predictability a culture offers, it is difficult to change an organizational culture (Schein, 2010). In the challenging process of changing an organizational culture by integrating CS, leaders play an important role (Eisenbach, Watson & Pillai, 1999; Whetstone, 2005; Benn et al., 2006; Hatch & Cunliffe, 2006; Doppelt, 2009). That is, within groups or organizations, cultures are formed by someone who takes a leadership role in perceiving the way in which planned collective actions can accomplish something that individual actions cannot (Schein, 1983). Specifically, leaders form the culture of an organization once they impose their

own *values and assumptions* on the group and when these have subsequently proven successful and eventually become the shared assumptions of the group (Schein, 2010).

1.2. Change agents, sustainability leadership and worldviews

The concept of a leader is often mentioned in the same breath with that of a change agent (e.g. Williams, 2003; DeRose, 2004; Arrata et al., 2007; Trybus, 2011). Partly, this seems related to the increasing need for leaders to fulfil the role of change agent (Tichy & Devanna, 1986; Schein, 1995; Eddy & Van der Linden 2006; Trybus, 2011). The opposite is mentioned by Hesselbarth & Schaltegger (2014) who state that 'leader' is one of the roles a change agent can take upon him or her. Change agents can be defined as individuals either external or internal to the organization who assist in managing (Herron & Hicks, 2008), triggering or promoting the change effort (Strudler & Gall, 1988). According to Van der Heijden et al. (2012), change agents can be senior managers or organizational members who have been specifically assigned to manage the change process. Whether we talk about a leader with a change agent role or the other way around, being able to lead change has become a valuable skill since organizations need to change in order to fulfil higher expectations of success (Trybus, 2011). For the purpose of this research, a change agent is defined as someone with a (temporary) *leadership role* in a certain change process. Because of the overlap and cohesion between the concepts change agent and leader, they will be used interchangeably.

Investigating the role of the individual change agent in the process of CS integration has not been done extensively by current research according to Visser & Crane (2010). Indeed, the authors noticed that most research on CS tends to aim at how change can be accomplished on an organizational level rather than on the role of the individual change agent in this process (ibid). While analysis with use of the Leapfrocs framework also remains limited to the higher abstraction level of the organization, there seems to be an important role for change agents in addressing the gap between vision and action on CS (Witjes et al., 2014) and, by extension, the process of integrating corporate sustainability into the organizational culture.

While CS is increasingly becoming an essential part of doing business (Robinson, Kleffner & Bertels, 2011), leadership has not been a focus in the field of sustainability research (Quinn & Dalton, 2007). This missing link calls for more research on the interface of both topics, addressed by among others Quinn & Dalton (2007), Ferdig (2007) and Brown (2011). According to Brown (2011),

sustainability leadership, also referred to as corporate social responsibility or CSR leadership, environmental leadership or ethical leadership, is a theory that includes elements of values and worldviews, competencies and behaviors of sustainability leaders. According to Ferdig (2007), anyone who attempts to understand and act on sustainability challenges can be considered a sustainability leader, he or she does not necessarily have to hold a formal leadership position.

Considering the influence of the sustainability leader or change agent on CS integration seems to imply a focus on either or all of the three elements as mentioned by Brown (2011). As mentioned before, the specific worth of the change agent for the process of CS integration seems to lie in his or her personal values and assumptions which have the potential to become the group's shared values and assumptions (Schein, 2010). Values concern the incentive for doing something (Eccles & Wigfield, 2002), and thereby influence a person's behavior. Therefore, as we saw that organizational behavior is determined by the organization's shared assumptions or values and beliefs (Lumby & Foskett, 2008; Sathe, 1983), individual behavior is determined by someone's personal values, which convey a belief about a desired aim (De Vries & Petersen, 2009) or what is desirable (Eccles & Wigfield, 2002). Value orientations are also used as a synonym to a person's worldview (Koltko-Rivera, 2004). According to De Vries & Petersen (2009), it is the combination of these value orientations and someone's world interpretations that form an individual's worldview. More specifically, a worldview is a set of beliefs and assumptions a person holds (Koltko-Rivera, 2004) or, in other words, an organized set of concepts and theories which allows people to establish an image of the world, thereby making it possible for them to comprehend as much as possible of their experience (Aerts et al., 2007). Worldviews can also be described as cognitive maps which an individual uses to make sense of the world around him and are, like basic assumptions, unconscious and taken for granted (Van Opstal & Hugé, 2013).

1.3. The seven worldviews of sustainability leadership

Worldviews of change agents for corporate sustainability can be researched from a developmental psychology frame, which is applied on sustainability leadership theory (among others by Boiral, Cayer & Baron, 2009; Brown, 2011; Divecha & Brown, 2013). Considering sustainability leadership from this frame differs from other leadership theories in that it is aimed at the influence of the worldview of an individual on his or her ability to lead instead of the influence of his characteristics (Hunter et al., 2014). The developmental psychology frame focuses on the different stages of development of a change agent's consciousness

and links these stages (or worldviews) to certain behavior (Boiral et al., 2009). This behavior is the result of an interpretation of people's thoughts, emotions and perceptions via a frame called the *action logics*, a significant element of a worldview (Schein, 2014).

The stages of development range from pre-conventional consciousness towards conventional and finally, post-conventional consciousness (Lynam, 2012). As a change agent moves from one stage towards the next, his or her worldview develops from simple to complex, from static to dynamic and from egocentric to sociocentric to world centric (Cook-Greuter, 2004). Each later stage reflects an increased capacity to function in a complex and changing environment (McEwen & Schmidt, 2007). These stages do not reflect someone's intelligence or character but his level of complexity, the extent to which he or she can deal with different situations and the extent to which he or she is personally engaged (Beck & Cowan, 1996).

Rooke and Torbert (2005) have defined seven action logics corresponding to sustainability leader behavior, each reflecting a different worldview. These action logics include the *Opportunist* (pre-conventional), *Diplomat*, *Expert*, *Achiever* (conventional), *Individualist*, *Strategist* and *Alchemist* (post-conventional) and can be used to analyze the different approaches to sustainability leadership (Boiral et al., 2009). Multiple authors discuss these worldviews (e.g. Cook-Greuter, 2004; McEwen & Schmidt, 2007; Boiral et al., 2009; Brown, 2011, 2012; Lynam, 2012; Divecha & Brown, 2013; Schein, 2014; Vincent, Ward & Denson, 2013,2015; Vincent, 2014). Drawing upon the main structure of the seven action logics by Rooke & Torbert (2005), a compilation has been made of the different elements these authors used to describe each worldview. These include the typical personality characteristics and capabilities reflected by each worldview (Manifestations) and types of behavior and activities each worldview reflects (Implications for sustainability leadership, and strengths and weaknesses) (Table 1).

The earlier stage worldviews each reflect a desire for some form of control: Opportunists try to control the outside world, while Diplomats try to control themselves and Experts attempt to exert control by developing their knowledge (Rooke & Torbert, 2005). In turn, Achievers aim for a position in which they feel in control of what is happening (Boiral et al., 2009). Conflicts are not easily handled by the earlier worldviews: while Opportunists seek conflict, Diplomats try to avoid it (Boiral et al., 2009). In general, people holding (pre)conventional worldviews do not invite feedback. While Opportunists reject feedback (it is

seen as an attack) (Cook-Greuter, 2004), Diplomats view feedback as disapproval (Cook-Greuter, 2004; Lynam, 2012). Experts take feedback personally (Cook-Greuter, 2004) and do not accept feedback from people who are not considered experts in the field (Cook-Greuter, 2004; Lynam, 2012).

The earlier stages of consciousness are characterized by a limited understanding of sustainability or a limited vision on sustainability (e.g. Boiral et al., 2009; Brown, 2011; Lynam, 2012). Measures for sustainability are implemented solely because there is a personal gain (Opportunist) (Boiral et al., 2009; Brown, 2011) or out of concern for appearance (Diplomat) (Boiral et al., 2009; Brown, 2011; Schein, 2014). The Expert in turn sees sustainability issues from a technical, specialized perspective (Boiral et al., 2009; Brown, 2011; Schein, 2014) requiring proven environmental services (Lynam, 2012). Thus, change agents with earlier worldviews consider sustainability from a limited perspective, either focused on how sustainability affects someone personally (Opportunist), how it affects the organization in which someone finds himself (Diplomat) or how it related to their expertise (Expert). Arguably due to this limited perspective, change agents holding an Opportunist, Diplomat or Expert worldview do not seem to be capable of integrating sustainability issues in the organization. Achievers do pursue the latter (Boiral et al., 2009; Brown, 2011), however, what is lacking is their capacity to reframe/challenge current practices (Boiral et al., 2009; Brown, 2011) arguably due to an inability to *think outside the box* (Rooke & Torbert, 2005).

It is not until the Achiever stage that change agents become reflective, perceive broader complexities and patterns (Vincent et al., 2015), look beyond personal concerns (Vincent et al., 2013) and develop an inviting attitude towards feedback (Cook-Greuter, 2004; Lynam, 2012). Achievers also distinguish themselves from earlier stages through recognizing that conflicts arise from the differences in interpretation between individuals (Rooke & Torbert, 2005). However, Achievers do not recognize the possibility of conflict between their behavior and their assumptions while Individualists do (Rooke & Torbert, 2005). This is related to an increased capacity of self-reflection, expressed by a greater self-awareness (Vincent, 2013, 2015), including an awareness of own emotions and inner conflicts and the capability to cope with them or reconcile them (Divecha & Brown, 2013; Vincent et al., 2013, 2015). Besides becoming more aware of the self, change agents with post-conventional worldviews show an increased awareness of the surroundings, implying that they gain a broader focus. This is expressed by an increased awareness of the different, sometimes conflicting viewpoints people hold (Boiral et al., 2009; Brown, 2012; Schein 2015) and the ability to

understand and interact with these people (Cook-Greuter, 2004; Rooke & Torbert, 2005). This seems related to the fact that individuals with later stage worldviews understand (are aware of) the worldviews of earlier stage individuals but not the other way around (Cook-Greuter, 2004). While Individualists can communicate well with people holding different action logics (Rooke & Torbert, 2005), Strategists are even capable of creating shared visions among these people and handle people's resistance to change (Rooke & Torbert, 2005). A more developed worldview also implies that a change agent is better able to deal with conflicts (Rooke & Torbert, 2005; Boiral et al., 2009) and shows a decreasing desire to defend him or herself (McEwen & Schmidt, 2007). Finally, post-conventional worldviews imply that the change agent is more inviting towards feedback. For example, Individualists consider feedback as necessary for self-knowledge, while Strategists invite feedback for self-realization (Cook-Greuter, 2004). Alchemists in turn think feedback is important for learning, but also take it lightly (Cook-Greuter, 2004).

Implicit to the broadening focus is that change agents with later stage worldviews are capable of placing sustainability in a wider context than just concerning the self or the organization. Individualists see sustainability as a responsibility to the planet (Lynam, 2012; Schein, 2014), while Strategists consider it to be important that sustainability is reflected in our decisions (Lynam, 2012). Alchemists are aware of the different views on sustainability and make sure they are being integrated (Lynam, 2012). Later stage worldviews are more focused on true integration of sustainability by means of the development of creative and original sustainability solutions (Individualist) (Boiral et al., 2009; Brown, 2011; Lynam, 2012), a pro-sustainability vision and the focus on both economic, social and environmental aspects of sustainability (Strategist) (Boiral et al., 2009; Brown, 2011). For the purpose of this research, post-conventional worldviews are seen as reflecting an integrative focus on sustainability, indicating that someone understands the multiple dimensions of sustainability and is able to place it in a broader context in terms of scope as well as time.

Table 1 The seven action logics for sustainability leadership (compiled from Cook-Greuter, 2004; Rooke & Torbert, 2005; McEwen & Schmidt, 2007; Boiral et al., 2009; Brown, 2011; Lynam, 2012; Divecha & Brown, 2013; Schein, 2014; Vincent et al., 2013,2015).

Stage of development / Worldview	A. Typical manifestations	B. Implications for sustainability leadership	C. Strengths	D. Weaknesses
Pre-conventional <i>Opportunist</i> (<i>Coercive power</i>)	A1. Impulsive, demanding, dependent (Vincent et al., 2015), externalizing blame, (Divecha & Brown, 2013; Vincent et al., 2015), focus on personal wins, the world and other people are considered opportunities to be exploited (Rooke & Torbert, 2005), rejects feedback (is seen as an attack) (Cook-Greuter, 2004), approach to outside world determined by perception of control (Rooke & Torbert, 2005)	B1. Environment is seen as a collection of resources for exploitation (Boiral et al., 2009), focus on self (Brown, 2011; Divecha & Brown, 2013), few and short term measures, only sensitive to sustainability issues when it affects him personally (by means of a threat or gain) (Boiral et al., 2009; Brown, 2011)	C1. Quick to respond to sustainability issues (Boiral et al., 2009; Brown, 2011), seizing sustainability opportunities (emergencies and sales) (Rooke & Torbert, 2005; Boiral et al., 2009; Brown, 2011)	D1. Limited understanding of sustainability (Brown, 2011), no regard for sustainability impacts (Boiral et al., 2009; Brown, 2011), few people want to follow them on the long term (Rooke & Torbert, 2005)
Conventional <i>Diplomat</i> (<i>Persuasive power</i>)	A2. Conventional, rule-bound (Vincent et al., 2015), need for belonging (Rooke & Torbert, 2005; McEwen & Schmidt, 2007; Brown, 2011; Lynam, 2012; Vincent et al., 2015), avoids conflict (Rooke & Tobert, 2005; McEwen & Schmidt, 2007; Brown, 2011; Lynam, 2012; Schein, 2014), is loyal to a certain group (McEwen & Schmidt, 2007; Lynam, 2012; Schein, 2014), focus on control of own behavior instead of external events/people, overly polite and friendly, has difficulties giving challenging feedback (Rooke & Torbert, 2005), feedback is received as disapproval (Cook-Greuter, 2004; Lynam, 2012)	B2. Focus on expected behavior and approval (McEwen & Schmidt, 2007; Brown, 2011; Lynam, 2012; Schein, 2014), supports environmental initiatives out of concern for the organization's image / appearance (Boiral et al., 2009; Brown, 2011; Schein, 2014), calms pressures related to sustainability issues within the organization (Boiral et al., 2009; Brown, 2011), sustainability is considered out of a sense of moral obligation / concerns for security (Lynam, 2012)	C2. Considers regulatory limitations, reactive attitude with respect to sustainability pressures (Boiral et al., 2009; Brown, 2011), supportive glue on teams, brings people together (Rooke & Torbert, 2005; McEwen & Schmidt, 2007; Brown, 2011; Lynam, 2012)	D2. Superficial coherence with external pressures, lack of true reevaluation of current practices, statements often contradict actions (Boiral et al., 2009; Brown, 2011), incapable of providing painful feedback or making the hard decisions necessary to improve performance (Rooke & Torbert, 2005)
<i>Expert</i> (<i>Authorative power</i>)	A3. Desires to stand out, wants to be unique (Divecha & Brown, 2013; Vincent et al., 2013), a perfectionist (McEwen & Schmidt, 2007; Brown, 2011; Divecha & Brown, 2013), has some self-awareness and is appreciative of multiple possibilities, self-critical, emerging awareness of inner feelings of self and others (Vincent et al., 2015), thinks he is always right (Rooke & Torbert, 2005), takes feedback personally (Cook-Greuter,	B3. Considers sustainability issues from a technical, specialized perspective (Boiral et al., 2009; Brown, 2011; Schein, 2014); Sustainability is a technical issue that requires proven environmental services (Lynam, 2012), pursues continuous improvement, efficiency and perfection (McEwen & Schmidt, 2007; Lynam, 2012), searches for scientific certitude before acting, preference for proven technical	C3. Development of sustainability knowledge, implementation of sustainability technologies (Boiral et al., 2009; Brown, 2011), good individual contributor (Rooke & Torbert, 2005; Brown, 2011)	D3. No clear definition of sustainability (Lynam, 2012), limited vision on sustainability, no integration of sustainability issues, does not appreciate collaboration (Boiral et al., 2009; Brown, 2011), no desire or appreciation of emotional

	2004), and does not accept feedback from people who are not considered experts in the field (Cook-Greuter, 2004; Lynam, 2012), exercises control by perfecting his knowledge (Rooke & Torbert, 2005)	approaches (Boiral et al., 2009; Brown, 2011), focuses on compliance with environmental laws (Schein, 2014)		intelligence or respect for people with less expertise (Rooke & Torbert, 2005)
<i>Achiever</i> (<i>Coordinating power</i>)	A4. Reflective, responsible and empathic, perceives broader complexities and patterns, self-critical, (Vincent et al., 2015), looks beyond personal concerns (Vincent et al., 2013), open to feedback if (Lynam, 2012) or especially when it supports goals (Cook-Greuter, 2004), wants to improve himself (Vincent et al., 2013), values achievements, (Vincent et al., 2015) and focuses on results (Lynam, 2012; Schein, 2014)	B4. Integrates sustainability issues in organization's objectives and procedures, is concerned with improving performance (Boiral et al., 2009; Brown, 2011); recognizes need for sustainability performance measures (Lynam, 2012; Schein, 2014), effectively achieves goals through teams (Brown, 2011)	C4. Pursues employee involvement (Boiral et al., 2009; Brown, 2011), challenges and supports employees, creates a positive team (Rooke & Torbert, 2005), well suited to managerial work (Rooke & Torbert, 2005; Brown, 2011), action and goal oriented (Brown, 2011)	D4. Lacks critical attitude towards conventions, finds it difficult to challenge current management systems (Boiral et al., 2009; Brown, 2011), does not think outside the box (Rooke & Torber, 2005)
Post-conventional <i>Individualist</i> (<i>Confronting power</i>)	A5. High sense of personal identity, tolerant towards self and others (Vincent et al., 2015), appearing awareness of inner conflicts (Divecha & Brown, 2013; Vincent et al., 2013, 2015) and paradoxes, values relationships over achievements (Vincent et al., 2015), interested in unique expressions of self and others (McEwen & Schmidt, 2007; Divecha & Brown, 2013), communicates well with people who have other action logics (Rooke & Torbert, 2005), feedback is considered necessary for self-knowledge (Cook-Greuter, 2004),	B5. Sustainability is seen as our responsibility to the planet; nature has intrinsic rights (Lynam, 2012; Schein, 2014), integrates opposing own and company's behavior (Brown, 2011), develops creative and original sustainability solutions (Boiral et al., 2009; Brown, 2011; Lynam, 2012), questions accepted ideas and underlying assumptions, development of a participative approach requiring employee involvement (McEwen & Schmidt, 2007; Boiral et al., 2009; Brown, 2011), discusses issues and differences (Brown, 2011; Lynam, 2012)	C5. Personal commitment, active consideration of suggestions and ideas of others (Boiral et al., 2009; Brown, 2011), stimulates awareness of other worldviews (McEwen & Schmidt, 2007), effective in consulting roles (Rooke & Torbert, 2005; Brown, 2011)	D5. Long and unproductive discussions, idealism that may lack logic (Boiral et al., 2009; Brown, 2011), ignoring key processes and people in the organization (Rooke & Torbert, 2005), ignoring rules when they are considered irrelevant (Rooke & Torbert, 2005; McEwen & Schmidt, 2007) or adapting them/creating new rules (McEwen & Schmidt, 2007; Lynam, 2012)
<i>Strategist</i> (<i>Integrative power</i>)	A6. Highly collaborative (Rooke & Torbert, 2005), highly self-aware (Vincent et al., 2013), respects people (Vincent et al., 2013), relationships are seen as interdependent (McEwen & Schmidt, 2007), tolerates ambiguity (Brown, 2012; Vincent et al., 2015), and paradoxes (Vincent et al., 2013), recognizes the systemic nature of relationships,	B6. Thinks decisions should be based on greatest good for humanity and nature (Lynam, 2012), brings about transformations on individual and organizational level (Brown, 2011), reframes issues (McEwen & Schmidt, 2007; Brown, 2011; Lynam, 2012), challenges existing assumptions (Rooke & Torbert, 2005), proposes a pro-sustainability	C6. Transformational leadership (Rooke & Torbert, 2005; Brown, 2011), true integration of sustainability, long term perspective (Boiral et al., 2009; Brown, 2011), socially conscious business ideas carried out in a collaborative	D6. Approach may seem impractical and difficult to understand, risk of disconnecting with pressure for short term gains (Boiral et al., 2009; Brown, 2011)

	able to cope with (inner) conflicts (Vincent et al., 2015), feedback is invited for self-actualization (Cook-Greuter, 2004),	vision and culture, interest for global sustainability issues, strives for integration of economic, social and ecologic aspects (Boiral et al., 2009; Brown, 2011)	manner, capable of creating shared visions among people with different action logics, well able to handle people's resistance to change (Rooke & Torbert, 2005)	
<i>Alchemist (Shamanistic power)</i>	A7. Charismatic (Rooke & Torbert, 2005), wise, broadly empathic, highly self-aware, reconciles inner conflicts and integrates paradoxes, understands own intrinsic nature (Vincent et al., 2015), is self-reflecting and realizing (self-actualisation) (Vincent et al., 2013), starts to see manners of own thought and language (Vincent et al., 2013), recognizes limitations of the ego (McEwen & Schmidt, 2007) and feedback is seen as essential for learning and change but at the same time it is taken lightly, skeptically (Cook-Greuter, 2004)	B7. Recognizes the existence of a multitude of sustainability definitions and is able to connect them (Lynam, 2012)/ is able to integrate different worldviews (McEwen & Schmidt, 2007), brings about societal transformations (transforming self and others) (Brown, 2011; Lynam, 2012), reframes (Brown, 2011; Lynam, 2012), holds up mirror to society (Brown, 2011), supportive of global humanitarian causes, involved in multiple organizations (Boiral et al., 2009; Brown, 2011), often works behind the scenes (McEwen & Schmidt, 2007; Brown, 2011)	C7. Leading society wide transformations (Rooke & Torbert, 2005; Brown, 2011), active involvement in transformation of the organization and society, concern for authenticity, truth and transparency, has a complex and integrated vision (Boiral et al., 2009; Brown, 2011)	D7. Risk for diverging managerial and organizational efforts to the benefit of the common good, risk of losing touch with the primary mission of the organization (Boiral et al., 2009; Brown, 2011)

In general, post-conventional worldviews are expressed by an ability to manage complexity (Boiral et al., 2009). For example, the change agent is able to think systemically (Boiral et al., 2009; Baron & Cayer, 2011; Brown, 2012; Schein, 2015). According to Werhane (2002), system's thinking implies that our thinking, experiencing and actions are interrelated and interconnected. Thus, systems thinking indicates that one is aware of the interconnectedness between and interdependence of systems (Schein, 2015). It also includes seeing the 'bigger picture' and recognizing that you are part of a system, which influences you as well as you influence it (Anderson & Johnson, 1997). Post-conventional change agents are increasingly tolerant towards ambiguity/uncertainty (McEwen & Schmidt, 2007; Brown, 2012; Vincent et al., 2015) or with other words they do not need an immediate answer or resolution, thereby showing a 'willingness to not know', as described by Brown (2012). From the Individualist stage on, change agents start to question and subsequently challenge accepted assumptions (Rooke & Torbert, 2005; McEwen & Schmidt, 2007; Boiral et al., 2009; Brown, 2011) as well as reframe issues (McEwen & Schmidt, 2007; Brown, 2011; Lynam, 2012). Post-conventional worldviews are also reflected by change agents with a long-term vision (Baron & Cayer, 2011; Lynam, 2012; Schein, 2014, 2015) and those with an open-mind, who think liberally (Schein, 2014,2015; Vincent, 2014).

Leadership, more specifically in accomplishing organizational change, seems most effective when the leader or change agent in question displays a post-conventional worldview (among others Rooke & Torbert, 2005; Boiral et al., 2009; Brown, 2012). This is for several reasons: as change agents develop from a lower to a higher stage of consciousness, the lower stages remain part of their response range (Cook-Greuter, 2004; Boiral et al., 2009), thereby providing them with the advantages of both the higher and the lower stages. Change agents with post-conventional worldviews can deal with complexities, integrate different viewpoints, come up with an integrated vision and promote transformational organizational change (Boiral et al., 2009). They also tend to think more deliberately, collaborate more, seek feedback, tend to be better at conflict resolution and actively seek to develop their employees (Brown, 2012), all of which seem to contribute to their success in accomplishing organizational change. *Table 2* summarizes the main characteristics of post-conventional worldviews as discussed above. Though the categorization of worldviews implies that someone either acts according to one view or another, in reality, individuals act according to a spectrum of worldviews (O'Loughlin, 2011). Therefore, it is expected that a change agent will show characteristics of several worldviews at the same time, though each to a greater or lesser extent.

Table 2 Capabilities reflecting a post-conventional worldview (compiled from McEwen & Schmidt, 2007; Boiral et al., 2009; Baron & Cayer, 2011; Brown, 2012; Lynam, 2012; Divecha & Brown, 2013; Vincent et al., 2013,2015; Schein, 2015).

	<i>Capabilities reflecting a post-conventional worldview</i>
E. Self-reflection	Self-awareness (E1) (Vincent et al., 2013,2015) including awareness of inner conflicts (E2) and capacity to reconcile or integrate them (E3)(Divecha & Brown, 2013; Vincent et al., 2013,2015)
F. Managing complexity	Capacity to think in longer time frames (F1) (Baron & Cayer, 2011; Lynam, 2012; Schein, 2014, 2015)
	Capacity to challenge /reframe (F2) (Rooke & Torbert, 2005; McEwen & Schmidt, 2007; Boiral et al., 2009; Brown, 2011; Lynam, 2012)
	Enhanced systems consciousness (F3) (Boiral et al., 2009; Baron & Cayer, 2011; Brown, 2012; Schein, 2015)
	Capacity to tolerate ambiguity / uncertainty (F4) (McEwen & Schmidt, 2007; Brown, 2012; Vincent et al., 2015), less subject to need for control (F5) (Baron & Cayer, 2011)
G. Broadening focus	Awareness of conflicting viewpoints (G1) (Boiral et al., 2009; Brown, 2012; Schein 2015), capacity to understand (G2) and interact / communicate with people holding conflicting viewpoints (G3) (Cook-Greuter, 2004; Rooke & Torbert, 2005)
	Open mindedness, liberal thinking (G4) (Schein, 2014,2015; Vincent, 2014), openness to feedback or suggestions and ideas of others (G5) (Cook-Greuter, 2004; Boiral et al., 2009; Brown, 2011),
	Capacity to handle/ resolve conflicts (G6) (Rooke & Torbert, 2005; Boiral et al., 2009; Vincent et al., 2015)
	Increasingly integrative focus on sustainability (G7) (e.g. Boiral et al., 2009; Brown, 2011; Lynam, 2012; Schein, 2014)

1.4. Content, process and context related factors

Though this research focuses on the specific influence of the change agent or sustainability leader on corporate sustainability integration, different factors influence organizational change effectiveness and thus the success of the integration process. These factors can be divided in content, process and context related factors (e.g Armenakis & Bedeian, 1999; Walker, Armenakis & Bernerth, 2007).

Related to the content of the change is the type of change itself, such as radical change or incremental change (Walker et al., 2007). According to Petersen, Boer & Gertsen (2004), radical change is episodic, disruptive, planned (there was an intention to pursue the change prior to the change) and top-down implemented. Radical change is seen as a change that alters the character of the organization in a fundamental way (Walker et al., 2007). Its episodic character is reflected by infrequency (Weick & Quinn, 1999). Radical change takes place in a period when

an organization is moving away from the equilibrium stage in which it find itself and is the result of a misalignment between the organization's structure and environmental demands (Weick & Quinn, 1999). It may require a fundamental redefinition of the organization by for example a new strategic orientation or change in workforce, structure or culture (Benn et al., 2014).

Incremental change on the other hand is emergent, continuous, bottom-up implemented and adaptive (Petersen et al., 2004) and alters the organization in a slow step by step movement (Walker et al., 2007). While Petersen et al. (2004) describe it as unintentional, Benn et al. (2014) refer to it as planned and thus pursued with intention. In this research it will therefore be considered as possibly being intentional as well as unintentional. Incremental change implies a redirection of a change process that is already taking place (Weick & Quinn, 1999). Incremental change is a process of ongoing transformation and will eventually lead to an alteration in the structure and strategy of the organization (Weick & Quinn, 1999). It mainly impacts the organization's everyday operational processes, like the way people work and the way processes take place (Benn et al., 2014). Incremental change can result in the modification of organizational values by involvement and participation of employees, thereby enhancing the organization's readiness for change (Benn et al., 2014).

Being ready for change means organizational members have positive attitudes towards the change (Jones, Jimmieson & Griffiths, 2005). This readiness, or *willingness* to change was found to be an important determinant of change success (Herron & Hicks, 2008). An important role in creating readiness for change is played by the change agent. His or her activities during the introduction and implementation of the change form the process related factors influencing organizational change (Walker et al., 2007). The way organizational members perceive the change and the extent to which those that are affected by the change are involved (Armenakis & Bedeian, 1999), influence the success of the change effort. Therefore, to enhance the effectiveness of the change, organizational members should be involved in the change (Armenakis & Bedeian, 1999), by means of honest and open communication on the process (Stelzer & Mellis, 1998; Walker et al., 2007).

The change agent should communicate the change message in such a way that it is clear that first, a sense of urgency is established (Stelzer & Mellis, 1998; Fernandez & Rainey, 2006). This sense of urgency should be expressed by a large enough stimulus in order for organizational members to understand that the change is inevitable, for they adapt easily to gradual, incremental stimuli

(Fernandez & Rainey, 2006). Understanding that the change is inevitable will lower resistance to change. Second, it has to be clarified that there is a gap between the current state of the organization and the desired one and third, that this particular change path is the appropriate way to reach the desired state and that it is better than other change paths (Walker et al., 2007). This also includes communicating a vision and developing a course of action or strategy (Fernandez & Rainey, 2006). Finally, clear communication of the benefits of the change for those involved are important determinants of change success (Walker et al., 2007).

Communicating the change also implies making sure organizational members understand how to deal with new ways of working (Stelzer & Mellis, 1998). Change agents have to make sure that organizational members feel that the organization and they themselves are capable of implementing the change successfully (Walker et al., 2007). Organizational members need to be involved (Fernandez & Rainey, 2006; Stelzer & Mellis, 1998), especially technical employees and operating managers (Stelzer & Mellis, 1998). Involving organizational members could be achieved by collaborating between teams and departments, which positively affects organizational change (Stelzer & Mellis, 1998). Effective change also means fitting the change to the strengths and weaknesses of different teams and departments and reorganising the roles and responsibilities with respect to the new organizational structure (Stelzer & Mellis, 1998).

Other process related factors influencing organizational change effectiveness are the planning and controlling of the change project, having the techniques to measure effectively, setting relevant and realistic objectives and communicating them and continuous maintenance, support and improvement of the change process (Stelzer & Mellis, 1998). These factors also include monitoring and evaluating of the change effort (Fernandez & Rainey, 2006).

Context related factors concern already existing forces in the internal and external environment of the organization (Walker et al., 2007). External contextual factors include competition, elimination of government interventions, or alterations in legislation or technology (Walker et al., 2007). Specific to public organizations, change agents should ensure support of key external stakeholders and political overseers (Fernandez & Rainey, 2006). Internal contextual factors relate to management tensions and the attitudes of management towards the change (Walker et al., 2007). Support and commitment of (senior) management was found as an important determinant of change success (Stelzer & Mellis, 1998; Fernandez & Rainey 2006; Herron &

Hicks, 2008). Organizational change also requires sufficient resources and often their redirection or redeployment towards new activities (Fernandez & Rainey, 2006). Levels of expertise and the presence of specialized knowledge resources as well as excess, underutilized resources also influence organizational change (Walker et al., 2007). Furthermore, the organization's 'change history' plays a role. When the organization has experienced the same type of change before, it is more likely to pursue the change again and if the change is consistent with a current or envisioned identity and image of the organization it is more likely that the change is to be sustained (Armenakis & Bedeian, 1999). *Table 3* shows an overview of the content, process and context related factors influencing organizational change as discussed above.

Table 3 Factors influencing organizational change (compiled from Stelzer & Mellis, 1998; Weick & Quinn, 1999; Armenakis & Bedeian, 1999; Petersen et al., 2004; Jones et al., 2005; Fernandez & Rainey, 2006; Walker et al., 2007; Herron & Hicks, 2008; Benn et al., 2014).

Factors influencing organizational change		
Content	Process	Context
<i>Type of change</i> (Radical or incremental)	<ul style="list-style-type: none"> -Setting relevant and realistic objectives -Communication: <i>A sense of urgency</i> <i>Vision</i> <i>Strategy</i> <i>Benefits</i> -Involvement of organizational members -Collaboration (between teams and departments) -Planning and controlling -Monitoring and evaluating <i>Adjusting in case of problems</i> -Continuous maintenance, support and improvement: having the techniques to measure the change effects -Fitting the improvements to the strengths and weaknesses of different teams and departments -Reorganising the roles and responsibilities with respect to the new organizational structure 	<p><i>External:</i></p> <ul style="list-style-type: none"> -Competition -Lack of government regulations -Changes in legislation -Changes in technology -Support of key external stakeholders (e.g. political overseers) <p><i>Internal:</i></p> <ul style="list-style-type: none"> -Management: tensions, attitudes towards the change, support and commitment to change effort -Resources: <i>Sufficient amount of resources</i> <i>Redirection / redeployment of resources</i> <i>Expertise</i> <i>Specialized knowledge resources</i> <i>Underutilized resources</i> -Change history -Consistency with identity and image of organization

These content, process and context related factors form the macro-level factors that influence the success of CS integration. However, these macro-level factors are not the only determinants of the success of CS integration. On the micro-level, a variety of different individuals within an organization exists, which all have other personalities and behaviors, potentially influencing the behavior of other organizational members (Walker et al., 2007) and by extension, influencing CS integration. One of these individuals, the change agent, will be highlighted in this research.

1.5. Theoretical model

Figure 2 visualizes the theoretical relationship between the different concepts discussed above. It visualizes the process of corporate sustainability integration which can be assessed by looking at different dimensions (the PDCA cycle, the different organizational levels, the different cultural levels and the different sustainability dimensions) and can be operationalized via integration items in which the change agent participates. It was found that corporate sustainability integration specifically requires a cultural change of the organization. While the organizational culture itself is in essence determined by the organizational basic assumptions, the worldview of a change agent is determined by his personal values and assumptions, which in turn influence the organizational basic assumptions and thus influence the cultural change. The worldview of the change agent gives both insights in his characteristics and capabilities (internally) and his behavior and activities (externally). The change agent's worldview influences the process of corporate sustainability integration and, by extension, the process of cultural change, via the integration item. The compilation of the seven action logics framework by Rooke & Torbert (2005) and compiled capabilities of post-conventional worldviews provide useful tools in order to assess how much of a change agent's characteristics / capabilities and behavior / activities are reflected by each of the worldviews. It will be investigated to what extent the worldview determines successful CS integration. In order to do that, other factors influencing the integration process will also be taken into account.

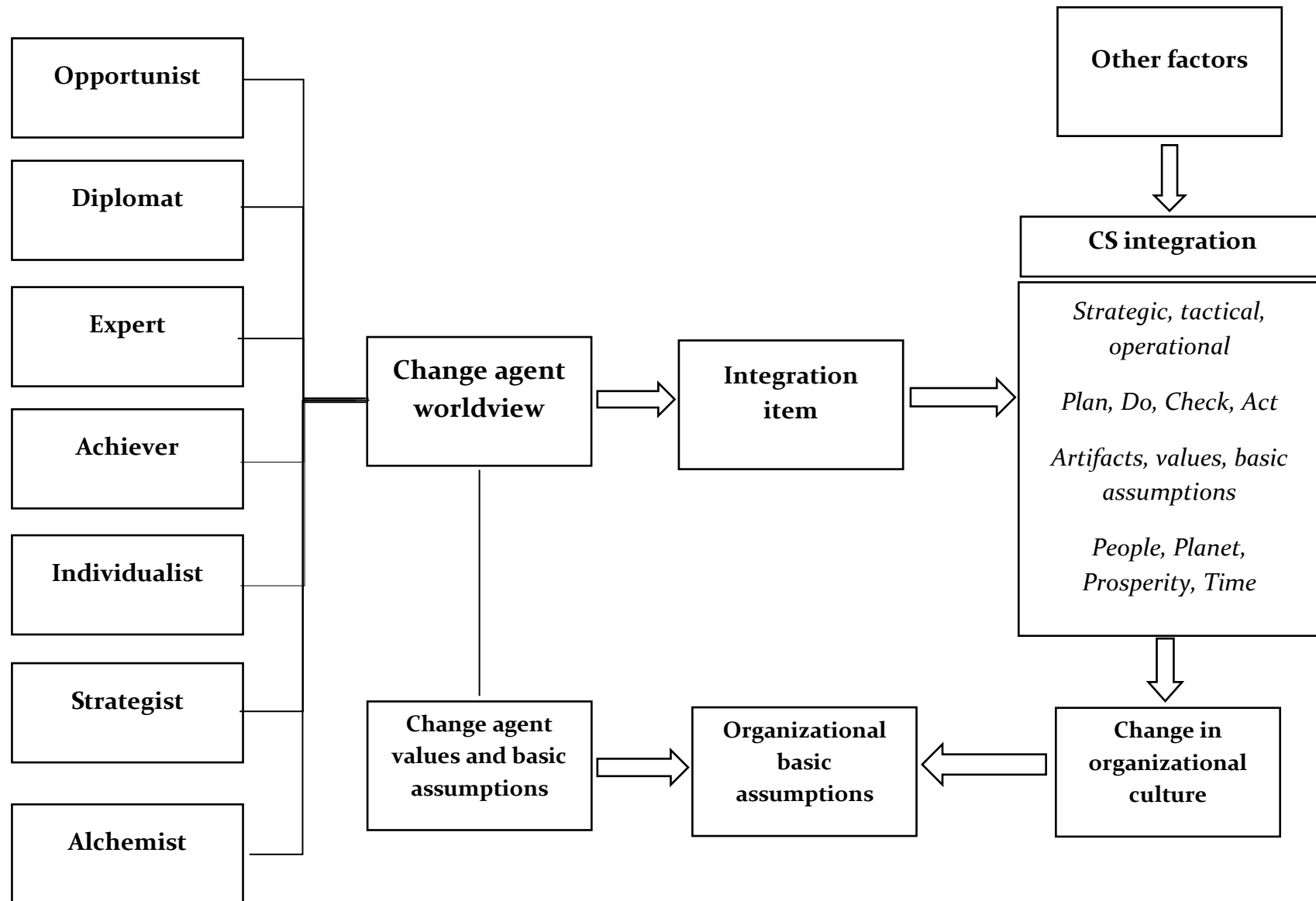


Figure 2. Theoretical framework.

2. Methods

The research took place in a Dutch public organization, RIVM, which counts 1500 employees and focuses on research in the field of public health and the environment, from where it draws up policy advice. RIVM is an independent research institute that is funded by the government and is working for among others the Dutch government¹ and international clients such as the EU and UN. RIVM participated in this research for the aim of finding out which kind of characteristics, competencies or skills a change agent preferably should have when it comes to the task of integrating corporate sustainability into the organization. To that end, a causal relationship was tested between two independent variables (the worldview of the change agent and other factors influencing CS integration) and the dependent variable (the level of success in CS integration). Overall, the research consisted of an empirical (identification) and a theoretical (description) part. The research was approached by means of interpretive analysis, which focuses on psychological qualitative research aiming to clarify in what way an individual experiences something and makes sense of that experience (Smith, 2004). In this research, experiencing and sense making was part of the change agent's worldview. The research did not aim to test the existing theory, rather it aimed to contribute to its development. Therefore, the focus of the research was giving meaning to the data rather than establishing causal relations.

2.1. Data collection and analysis

2.1.1. Characterizing the integration success

Integration items operationalize the process of CS integration and were therefore used as a measure of the integration success of corporate sustainability. In earlier research by Van Denzel (2016), several integration items were identified, assessed and compiled, (see Appendix G for an overview of all the integration items). In his compilation, Van Denzel (2016) distinguished between activities, results and thoughts. Since it is difficult to find a change agent who is responsible for a *thought*, only *activities* and *results* were taken into consideration. No data was found for *all* Leapfrocs dimensions of each integration item. Therefore, only the fifteen items of which most dimensions were covered were selected. From these fifteen items, eventually it was decided to select three items. This selection was based on two criteria: 1) the type of

¹ The Ministry of Public Health, Welfare and Sports, the Ministry of Infrastructure and the Environment and the Ministry of Economic Affairs, Agriculture and Innovation.

integration item has to lend itself for the identification of change agents and 2) the integration items had to show some variation in the level of success².

Van Denzel (2016) scored the integration of corporate sustainability on a success scale, ranging from unsuccessful (0% successful) to successful (100% successful). A 100% score indicates that an integration item covers all the five dimensions of the Leapfrocs model. One individual dimension can range from full confirmation, semi confirmed, confirmed not applicable³ to uncomplete data. The different items identified by Van Denzel (2016) are graphically represented by colour codes and combined values: green (1), yellow (0,5), red (0) and white respectively (0) (see Appendix G). By assigning these scores to each separate dimension of the integration items, he sorted the items based on their success (100% scores equals green for all sub-categories of the five dimensions, thus all scoring 1).

2.1.2. Characterizing the context

To get a better view on the context of the CS integration process and to be able to identify change agents, several employees⁴ connected to the items were consulted on the *people involved, the steps that have already been taken and the planning of the projects*. They were also asked about their role in the items as well as their view on who they think is a change agent with regard to the items. Several documents concerning the items were consulted to substantiate the view of the employees. This resulted in an overall description of the context of the items (see sections 3.1.1., 3.2.1 and 3.3.1.), which was analysed on specific factors influencing the items.

2.1.3. Characterizing the change agent

Identifying the change agent

With the identification of the change agent, an exploratory approach was taken. Each integration item involved a number of employees who all influence the item to a certain extent. The final selection of the change agents among these employees was based on the overall context description of the items and was substantiated by linking back to the definitions of a change agent / leader as stated in the theory. It was found that multiple possible change agents exist, but

² The definition of 'success' in the Leapfrocs framework depends on the extent to which the different dimensions are covered by the item. The more dimensions are covered, the more successful the item is.

³ A dimension that is *confirmed not applicable* reflects data indicating that this dimension is not covered.

⁴ Appendix D includes a list of each of the consulted employees or those employees who are explicitly mentioned in the description of the item's context.

it was chosen to select one change agent per item. To facilitate the selection process and to guarantee the usefulness of the chosen theory (among others leadership), it was determined to select those individuals who have been formally appointed as leading or coordinating the items.

Describing the change agent's worldview

For the description of the change agents' worldviews, the framework of the seven action logics (Table 1) and combined post-conventional capabilities (Table 2) were consulted. They formed the basis for an in-depth interview (Appendix A) and two different questionnaires (Appendix B and C) directed to / about each change agent. The purpose of both the interview and the questionnaires was to find out which worldview the change agent holds or of which range of worldviews the change agent shows most elements. Elements refer to either characteristics / capabilities (corresponding to column A of Table 1 or corresponding to Table 2) or behavior / activities of the change agent (corresponding to columns B, C and D of Table 1).

Each change agent participated in one in depth-interview, taking approximately 45 minutes each. One questionnaire (Appendix B) was handed to both the change agent and three direct colleagues, the other only to the colleagues (Appendix C). Thus, three in depth interviews were conducted and 21 questionnaires were filled in. The interviews were transcribed and results were converted into quotes (Appendix F) and the questionnaire results were visualized in a table for all change agents combined (Appendix E). For both the questionnaires, colleagues were selected that have worked closely with the identified change agent in the integration item, to make sure they had a clear image of that person. The reason for selecting three colleagues is twofold: first, three descriptions of a person lowered the risk of obtaining too diverging descriptions in comparison to one or only two descriptions. Second, with respect to time available for the research, three questionnaires per integration item formed the maximum amount of data that could be analyzed. The colleagues were selected in such a way that the final selection consisted of two colleagues working more closely, on the same level as the change agent while the other one was the supervisor of the change agent with respect to the integration item. This to increase the diversity of the views obtained.

In-depth interview

Each identified change agent has been interviewed to identify his or her worldview based on *Table 1* (Manifestations, implications for sustainability leadership, strengths and weaknesses) and *Table 2* (Capabilities reflecting a post-

conventional worldview). Which specific elements from *Table 1* and *2* were included in the interview questions is included in *Appendix A* in the form of a code at the end of each question. The subjects covered in the interviews include the change agent's career path (as introduction/context information), the organizational level corresponding to their function⁵, the integration item and their vision on sustainability / relation between the item and sustainability (see *Appendix A*). The questions were constructed in such a way that the answers provided insight in the change agent's level of self reflection, capacity to manage complexity and his or her broadening focus (as derived from *Table 2*). The transcripts of the interviews showed different elements corresponding to different worldview(s) (ranges) and these were subsequently grouped and coded based on *Table 1* and *Table 2*. Two elements of *Table 2* were left out from the interview questions / questionnaire statements: capacity for long-term thinking and systems thinking. While the other elements of *Table 1* and *2* could be derived from the content of a respondent's answer, these two elements had to be derived by analysing the structure of the respondent's answer, which indicates a need for psychological assessment (Sentence Completion Test, e.g. Loevinger, 1985) for which the researcher had no knowledge and no means available.

Self-completion Questionnaire 1: Characteristics and capabilities

Both the identified change agents and their three direct colleagues (*Figure 3*) have been handed the same self-completion questionnaire covering multiple characteristics and capabilities of each worldview separately or covering those of a range of worldviews (pre-conventional / conventional or post-conventional), see *Appendix B*. Providing both the change agent and the colleagues the same questionnaire gave the opportunity for comparison among the answers and gave insights in how the change agent views him or herself and how he or she is viewed by other people. The elements were formulated as statements of which the change agent had to choose the extent to which they were applicable to him or herself and the colleagues had to choose the extent to which they considered each statement applicable to the change agent. In questionnaire 1, in total 13 elements were related to one specific worldview, the remaining seven elements covered a range of worldviews, thus either (pre)conventional or post conventional. In *Appendix B* it is shown which element in questionnaire 1 refers to which parts of *Table 1* and *2* in the form of code. The answers to the questionnaire are shown in *Appendix E*.

⁵ It is important to note that, in case the change agent was no longer involved in the item, he or she was asked about the function at the time of involvement in the integration item, not the current function.

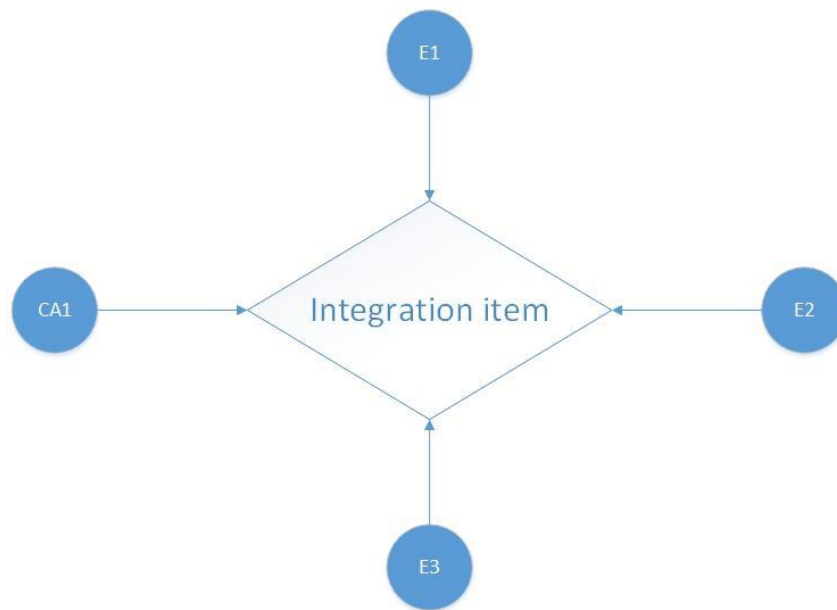


Figure 3 Visualization of the possible order of individuals involved in each integration item. (CA1 = Change Agent 1, E1 = Employee 1 etc.).

Self-completion Questionnaire 2: Behavior and Activities

Questionnaire 2 (Appendix C) was based on elements from *Table 1* (Implications for sustainability leadership, strengths and weaknesses) and thereby provided insights in the behavior / activities of the change agent and the strengths and weaknesses that link to this behavior. Since it was considered that the colleagues have a clearer image of the behavior / activities of the change agent than the change agent him or herself, this questionnaire was only handed to the colleagues. The elements were formulated as statements of which the colleagues had to choose the extent to which they were applicable to the change agent. In questionnaire 2, each worldview is reflected by two statements, thus 14 statements in total. Which statement reflects which element from *Table 1* is shown by a code in front of each statement (Appendix C). The answers to the questionnaire are shown in *Appendix E*.

Both questionnaire 1 and 2 were based on a five point Likert scale covering the following options to choose from:

1. *Strongly disagree*
2. *Disagree*
3. *Neither agree nor disagree*
4. *Agree*
5. *Strongly agree*

The questionnaires were developed in such a way that they were easy to answer. This was also done with respect to the time available to analyse the answers as well as the expected time participants would be willing to spend on a questionnaire regarding their view on themselves or a colleague.

Analysis change agent

The results of both questionnaires and the separate interviews were analysed by grouping together the elements covering each specific worldview and those covering a range of worldviews. Elements corresponding to a specific worldview were reflected by both the questionnaires as well as the interview and covered elements from all columns in *Table 1* (thus Manifestations, Implications for sustainability leadership and strengths and weaknesses). The interview transcripts were analysed by selecting quotes and analysing them based on what was said directly in the quote combined with an analysis of what the change agent said earlier or later in the interview (as is in line with interpretive analysis, see Smith, 2004).

For each worldview it was counted how many elements were found for each change agent and by dividing them by the total number⁶ of elements, they were converted in a percentage. For example, CA₁ shows two characteristics specific to the Individualist worldview (tolerant, valuing relationships over achievements), while the total number of elements in column A5 is seven. Calculating the percentage amounts to: $2 / 7 \times 100 \% = 28.6 \%$ of the Individualist worldview. For analysing in which range of worldviews the respective change agents could be found, another method had to be used. In total there were 16 elements corresponding to a range of worldviews, based on conclusions drawn from *Table 1* or *Table 2*, spread over questionnaire 1 and the interview. Each element in itself was considered to correspond with a post-conventional worldview and the opposite with a (pre)conventional worldview.

Elements were included in the analysis if at least the change agent him or herself and two out of three colleagues agreed with a statement, or whether at least all three colleagues agreed with a statement (questionnaire 1). For questionnaire 2, elements were included in the analysis if at least 2 out of three colleagues agreed with a statement. The elements from the interviews were included in the analysis if these were explicitly reflected by certain quotes. They were considered to be explicitly reflected when a quote strongly indicated a certain element or when a relatively large number of different quotes all indicated a

⁶ Referring to either the total number of elements in the Manifestations column or the total number of elements in the Implications for sustainability leadership, strengths and weaknesses columns in *Table 1*.

certain element. In the visual representation (see Section 3, Table 5,7 and 9), a distinction was made between elements that applied to the change agent and elements that *strongly* applied to the change agent. The latter are elements that were found applicable to the same extent by both the change agent and /or all three colleagues and / or that were strongly reflected by the interviews, either by the clarity of the quote itself or the number of quotes all indicating the same element.

To identify to what extent the view of the change agent him or herself corresponds to the view his or her colleagues have, all four answers to each statement in questionnaire 1 were compared and expressed as a percentage of congruent answers. Thus, a percentage of zero indicates that the change agent has given a completely different answer to each statement compared to his or her colleagues, and 100% indicates that all answers were given in the same range by at least the change agent him or herself and two out of three colleagues. A higher congruence percentage is interpreted as a higher possibility that the worldview characterization of the change agent is correct and stable.

Some elements were explicitly included in both questionnaire 1 as the interview. These include the elements 'likes to receive feedback (G5), can handle uncertainties well (F4), can handle conflicts well (G6), can interact well with people holding conflicting viewpoints (G3) and being self-aware (E1). The element 'likes to collaborate' (A6) was unintendedly found by both questionnaire 1 and the interview. The element 'being focused on actions and targets' (C4) was unintendedly found by both questionnaire 2 and the interview. Other elements were unintendedly found by solely the interview, these include involvement in multiple organizations (B7), being empathic (A4 and A7). If elements were reflected by both the questionnaire(s) and the interview they were only counted one time. If the interview results and the questionnaire results showed contradictory outcomes with respect to these elements, the results of the questionnaire were considered. This since the interview was considered to result easier in ambiguous answers than a questionnaire in which the answers are already clearly formulated.

2.1.4. Overall analysis

Results on the context information, the respective change agent's worldview and the integration success were first interpreted separately per item (see sections 3.1-3.3). In the integrative results section (3.4.), first, an interpretation is given per variable (thus worldviews, other factors or integration success) to see how the worldviews, other factors and the integration success differ or coincide

between the items. This is followed by a global interpretation of each case. Interpretation meant attempting to see whether the worldview and / or the context information explained the extent to which the item scores on a particular dimension and thus to see if there is a relationship between change agents' worldview and the success of corporate sustainability integration. This way it was possible to get an idea of the extent to which the worldview of the change agent is determinant of the integration success and to which extent other factors are determinant.

2.1.5. Limitations of the methods

The Leapfrocs framework has been designed initially for the implementation in small to medium sized enterprises, which does not correspond with the size of the case study organization in this research. Overall, while it is still under development, the exact implementation and interpretation of its results still remain unestablished and largely subjective. By selecting multiple integration items as separate case studies, the internal validity of the research was increased. Still, the risk exists that the relatively low number of case studies will not give conclusive results.

The selection of change agents is by no means definite. It depended on the interpretation of both the researcher and the consulted employees. Other researchers might select other change agents, thereby leading to different results on worldviews. The researcher tried to comprehend the change agents' worldviews without letting her own assumptions about the data interfere. However, since describing the change agent's worldview is done on the basis of one's own worldview or frame or by the specific way in which one approaches and identifies an individual as a research subject (Van Opstal & Hugé, 2013), ethnocentrism and researcher bias may have occurred. As a result, the image of the change agent that the researcher has drawn can never be interpreted as completely accurate.

With respect to the questionnaires and the interview, it turned out that it was challenging to select the right elements in order to get a good overview of the change agents' worldviews. For the interview as such, it was important to formulate the questions in such a way that the provoked answer would give insight in a certain element.

3. Results

The findings consist of three case descriptions combined with interpretations of the context of each integration item, the change agent's selection and worldview and the success of each integration item. This section ends with an integrative interpretation of all cases.

3.1. Item 1

3.1.1. Context

The integration item has been defined as a *result*, a policy document. The document evaluates the former Environmental Policy (2013-2014) and describes the topics of sustainable employability, measurement of sustainability, sustainable purchasing, the development of sustainability awareness among RIVM employees and connections with other stakeholders in the field of sustainability. The document also describes which sustainability ambitions RIVM has and how the institute aims to achieve them by 2020. The document concludes with a time planning for each theme (among others moving to the new building, developing a measurement tool, waste management). This planning, including different targets, indicates that the change item 1 implies can be seen as *planned*. However, the planning did not include a clear strategy: there were no clear targets or objectives formulated. Though not officially included in the organization's strategy, it is noted in the document that a clear link exists between sustainability and some of the key success factors from the organization's strategy. It also links to already ongoing projects such as moving to the new building, *onderswerken* and working Lean. Therefore, item 1 can be seen as initiating a redirection of changes that are already taking place, indicating an incremental, continuous change.

The idea for integrating corporate sustainability within RIVM has been initiated by the Head Sustainability, Drinking Water and Soil (A, see appendix E for an overview of the functions of these organizational members) and Project manager for Project New Housing (B). They approached the Deputy Director-General (C) after which he asked the head of *Facilitair Bedrijf* (D) if she would like to take the responsibility for the internal sustainability of RIVM. In the beginning of 2013 she was appointed as the Internal Sustainability coordinator. A *Quick Scan* has been executed by order of D and an external bureau called the KennisMakelaar on March 1, 2013. For the period 2013-2014, a first *environmental* policy plan was created, based on this quick scan. The plan was centred around circular economy, sustainable purchasing and sustainable employability. An

inventory was made on which tools were available and whether they were used. It turned out that most available tools were not yet being used enough, indicating an underutilization of resources. An external factor seems to have motivated the pursuit of sustainability: in the plan it is noted that the corporate world wants the government to create a more challenging environment when it comes to sustainability and it is mentioned that RIVM should respond to this request.

Lead by D, several individuals have contributed to item 1. There was no official team around the policy, but there were a range of sub teams who all contributed, including General and Technical Services, Organization & Personnel, Purchasing, Compliance, ICT, PNH of *operations* and the Centre for Sustainability, Environment and Health, the Centre for Infectious Diseases Control, and Prevention and Food of the *primary process*. It thus mainly impacted the operational part of the organization, a characteristic of incremental change. Along the process, D informed the DR (Board of Directors) via project meetings with C, in order for him to promote the subject among the DR members. D also presented the policy plan herself to the DR. D found that the interpretation of and motivation for sustainability differed among the DR members. At the same time, there was a lack of management support for item 1 (also mentioned by D). This lack of management support seems in contradiction with the fact that the change item 1 implies is consistent with the image and identity of the organization (*Committed to Health and Sustainability*, as mentioned on the organization's website).

Postponement of its implementation and consideration of other strategies besides sustainability with respect to *Nieuwe Huisvesting* were considered to have negatively influenced item 1 (D). There was no official monitoring and evaluation of the item, thereby making it difficult to maintain, improve and support the change effort. Official communication other than the policy document itself was absent. This communication also lacked a clear vision, a sense of urgency, an explanation of why the change should be pursued and why this particular strategy is the right way to do it.

By summer 2015 a second, adjusted policy plan was handed to the board, in which more capacity was requested from employees in the primary process and a special sustainability coordinator. D presented the idea of appointing a sustainability coordinator for 0,5 fte. It was intended that this person would be able to play a more coordinating role instead of having to do all the work him or herself. The board, partly because of a lack of available budget, rejected this

plan. D was no longer allowed to work on the sustainability policy since her work did not add to her hours. At that moment, the tasks of D have been transferred to a colleague from operations (E). Though the implementation of item 1 is limited up till now, on the shop floor, small efforts are still taking place.

Figure 4 visualizes how item 1 has evolved throughout the organization, starting left in the top with the those who initiated it, moving via management to the sustainability coordinator to the different departments that contributed to item 1. Reciprocal arrows between the coordinator and *operations* and *primary process* indicate a two-way interaction in which feedback is exchanged between the coordinator and the contributing departments of operations and between the coordinator and contributing departments of the primary processes. Table 4 summarizes the content, process and context related factors found influencing item 1.

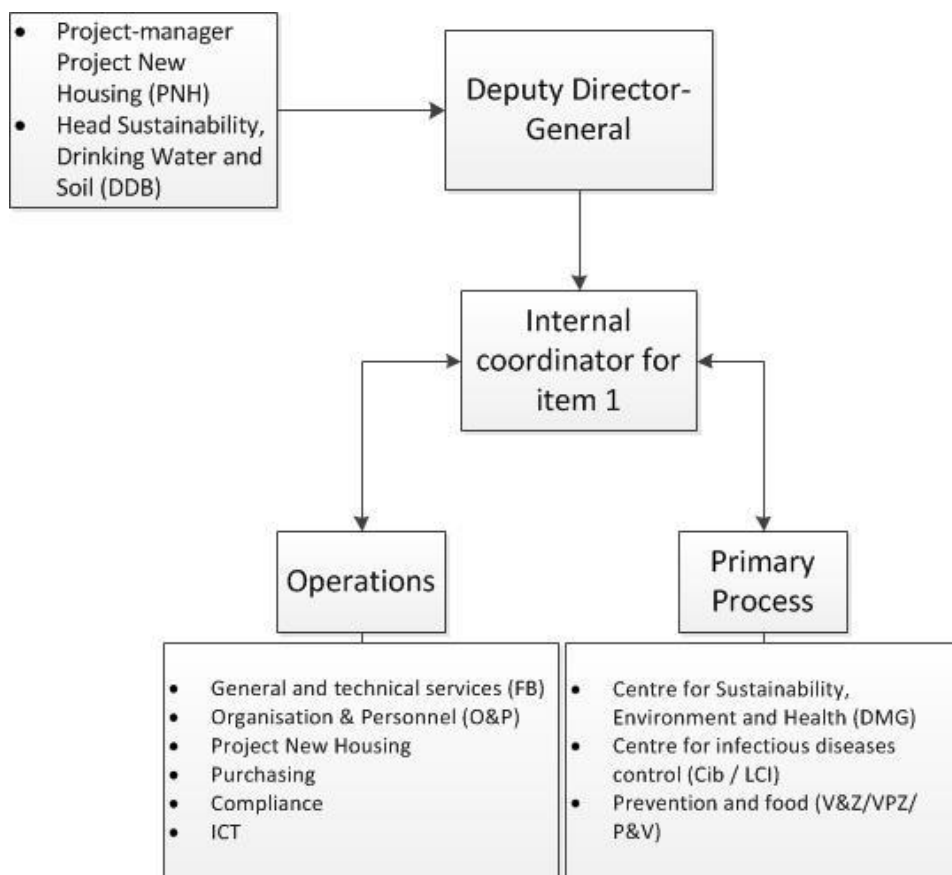


Figure 4 Visualization of how item 1 has evolved throughout the organization.

Table 4 Content, process and context related factors influencing item 1.

	<i>Factors influencing item 1</i>
Content	Incremental change (bottom-up)
Process	Collaboration (but no official team)
	No official communication (lacking clear vision / sense of urgency)
	No official monitoring and evaluation
	No clear targets
	Not officially part of the strategy
Context	Lack of management support and commitment
	Underutilization of resources

3.1.2. *Change agent*

For item 1, along the process, A, B, D, E were identified as change agents. A and B for their initiation of the change process, D for her promoting and managing role with respect to the item at the time it was drawn and E for taking over the position of D currently. Since the integration success of item 1 was assessed by former research for the time D was involved, she has been selected as a change agent⁷. For reasons of clarity, person D will from now on be referred to as CA₁ (change agent 1).

The questionnaires and the interview have given insight in the worldview of CA₁, particularly the characteristics and activities / behavior that are reflected by it. Of all three change agents, CA₁ shows most elements of the range post-conventional worldviews (75%) (see Table 5 and Figure 5). However, when comparing different elements of different worldviews CA₁ shows a more divergent view. She shows specific characteristics / capabilities of the Achiever, Individualist, Strategist and Alchemist worldviews, but not of the earlier worldviews. By contrast, CA₁ shows behavior /activities relating to all worldviews except the Achiever worldview, which is, by contrast, most reflected in her characteristics. Also worth noting is that the characteristics and capabilities of CA₁ are mostly reflected by the Achiever and Individualist worldviews while her behavior and activities are mostly reflected by the Individualist and Alchemist worldview. In total, when considering *Figure 6*, CA₁ shows 60,2 % of the characteristics / capabilities reflecting the post-conventional worldviews together and 30% of the (pre)conventional worldviews (Achiever). When considering her behavior / activities, CA₁ shows 26,1% of

⁷ This will also make sure that the level of integration success can be rightfully compared with the worldview of the change agent.

behavior / activities reflecting a (pre)conventional worldview and 34,3 % reflecting a post-conventional worldview.

With respect to her characteristics / capabilities, CA₁ can be considered tolerant (*Individualist*), responsible, reflective (*Achiever*), open minded (*post-conventional*) and collaborative (*Strategist*) (see answers to questionnaire 1, Appendix E). Her preference for collaboration was also reflected by the interview (see quote 50 and 51, Appendix F). She can be considered empathic (56) (*Achiever* or *Alchemist*), shown by the interview. CA₁ can be considered self-aware (*post-conventional*), shown by questionnaire 1 and by the interview. In the interview, she reflects on how she changed as a person (1). She further shows an awareness of and capacity to reconcile inner conflicts (*post-conventional*). CA₁ recognizes that her behavior has changed due to her work in item 1 and she recognizes her conflicting emotions in a situation where she wants to achieve something that turns out to be not allowed for (7,8). CA₁ clearly shows capacity for systems thinking (*post-conventional*) (9,10,11,12,13,14). She recognizes sustainability plays a role at different levels, either on a personal level or on an organizational level or even global level. She links her current motivation for sustainability to her childhood and the way she was raised. She realizes that, by looking broader than just on a personal level, many initiatives for sustainability are already taking place. She also links past and future and herself as a person to society. CA₁ shows capacity to think on a longer term, referring to her life after retirement (16). As the only change agent, she refers explicitly to sustainability on the longer term, as is in coherence with a post-conventional worldview. CA₁ refers to sustainability in a broader sense, referring not only to her direct environment but also to the whole planet. An increasingly integrative view on sustainability reflects a post-conventional worldview. According to the answers given in questionnaire 1, CA₁ values relationships over achievements (*Individualist*) and is able to interact well with people holding different viewpoints (*post-conventional*). This is also reflected by the interview answers: she is aware of the existence of conflicting viewpoints and is able to understand people who hold these (23) (*post-conventional*). CA₁ shows that when there is a conflict she will make sure it is dealt with, though she does not seek for it (35), indicating that she can handle conflicts well. The answers to questionnaire 1 and the interview answers (indicate that CA₁ is capable of dealing with uncertainties. In the interview this is shown by her statement that she does not need clarity of a task first in order to do it (*post-conventional*) (21).

With respect to the behavior /activities of CA₁ (see answers to questionnaire 2, Appendix E and interview quotes Appendix F), she can be considered as focused on expectations and approval of others (*Diplomat*) and taking measures that

were focused on the short term (*Opportunist*). She actively pursued transformation of the organization with her actions regarding item 1 (*Alchemist*). She was focused on the development of knowledge around item 1 (*Expert*) and developed creative and original solutions with respect to item 1 (*Individualist*). She handled resistance of colleagues well (*Strategist*). In the interview (see quotes Appendix F), it became clear that CA₁ was personally committed to her work with respect to item 1 (*Individualist*) (45, 46, 47). She thinks sustainability is an important subject and she sees the interconnections between the different dimensions, though her focus is on the planet dimension (39,40). Finally, it is worth noting that CA₁ involves herself in different organizations with respect to sustainability (*Alchemist*) (55). *Table 5* shows the overall image of CA₁, divided in characteristics / capabilities and related behavior /activities.

Table 5 Characterization of CA₁ consisting of characteristics / capabilities and behavior / activities, based on results from questionnaire 1, 2 and the interview. In bold italics: elements found strongly applicable to the change agent. Congruence: similarity between view CA and view colleagues.

	<i>Characteristics / capabilities</i>	<i>Behavior / activities</i>	Congruence
CA₁	Tolerant, responsible, reflective, open minded, <i>self-aware</i> , empathic, <i>likes to collaborate</i> , values relationships over achievements Long-term thinking <i>Enhanced systems consciousness</i> <i>Handles uncertainties well</i> Awareness of conflicting inner emotions and capacity to integrate them Awareness of conflicting viewpoints Capacity to understand people with conflicting viewpoints Interacts well with people holding different viewpoints Handles conflicts well Integrative focus on sustainability	Takes measures that are focused on the short term Focused on expectations and approval of others Focused on knowledge development Develops creative and original solutions <i>Personally committed</i> Handles resistance of colleagues well Pursues transformation of the organization Involved in multiple organizations	45%

Figure 5 shows the percentage of characteristics / capabilities corresponding to a post-conventional worldview, based on answers from questionnaire 1 and interview quotes.

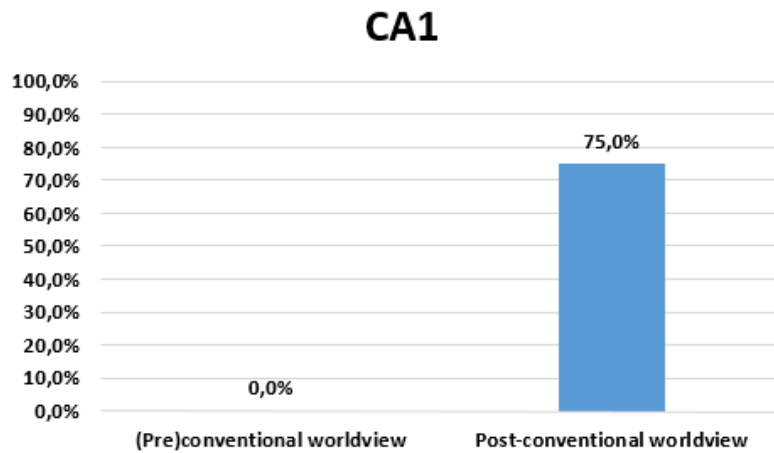


Figure 5 Percentage of characteristics / capabilities shown by CA1 corresponding to a (pre)conventional or post-conventional worldview based on the interview results and results of questionnaire 1.

Figure 6 shows the percentage of characteristics / capabilities and behavior / activities of CA1 that are reflected by each separate worldview. It has to be noted that elements integrated in Figure 5 correspond to a range of worldviews and cannot be allocated to the separate worldviews in Figure 6.

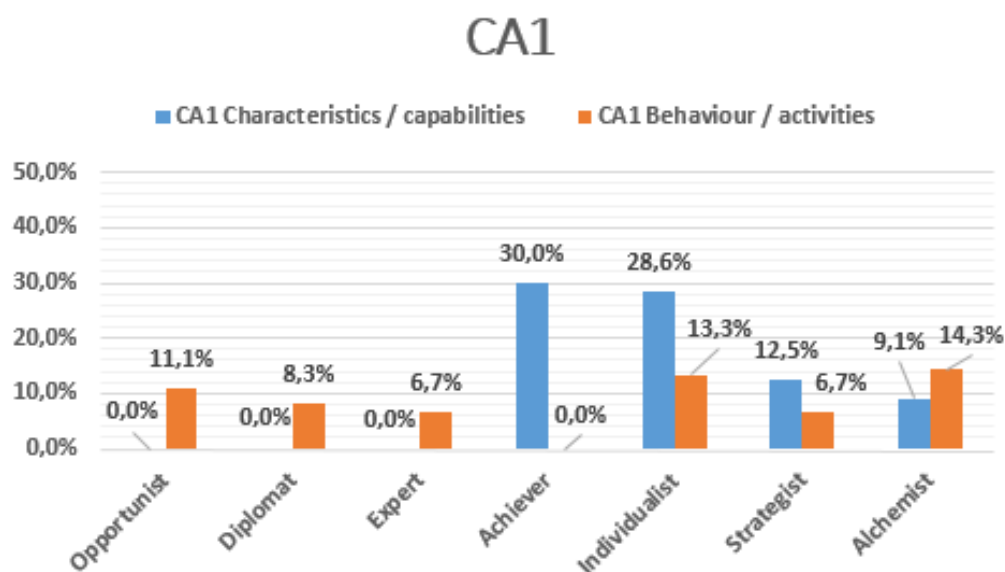


Figure 6 Percentage of characteristics / capabilities and behavior / activities shown by CA1 corresponding to each worldview based on results from questionnaire 1 and 2 and the interview.

3.1.3. Integration success

The integration success of each integration item shows the success in terms of the three sustainability dimensions (People, Planet, Profit), for the PDCA cycle on all three organizational levels and for the artifacts, values and beliefs, and basic assumptions on all organizational levels. Finally, it shows the integration success for the time dimensions (past, present, future). The success percentage was calculated by adding all the separate scores for each dimension together (maximum score for each dimension is 1), and dividing this number by the total possible score, which is the total of the number of dimensions, 23. For item 1, this amounted to a percentage of 69% successful CS integration. Figure 7 shows which Leapfrocs dimensions are covered by item 1.



Figure 7 Level of corporate sustainability integration of item 1.

Item 1 was defined as a *result*. It covers the planet dimension of sustainability, however, only partly the people and prosperity dimensions. The item only partly covers the plan-do-check-act cycle on the strategic level. The item does cover the entire PDCA cycle at the tactical level. On the operational level, the plan and do phases are covered by the item. On the operational level, the check and act phases are not covered. With respect to the organizational culture, the item covers the artifacts and values and beliefs on all organizational levels, indicating that it is part of the visible structures of the organization. Only on the operational level, the item (partly) covers the basic assumptions. The present and future time dimensions are reflected by item 1, but information is lacking for the past time dimension. This indicates that presently, it plays a role and is projected to play a role in the future.

3.2. Item 2

3.2.1. Context

In 2012, a program started called '@nderswerken', as a result of the desire to connect different programs within 'het nieuwe werken'. Three different departments contributed to the program: New Housing, ICT and HRM. In 2011, F (ICT), G and H (New Housing) got involved in the @nderswerken program, on the initiative of E (HRM). Together they created a proposal for @nderswerken, after which a program plan was established. The program started when a program manager was appointed, I. He then created a team to perform the program for 4 years (2012-2015). One of the KPI's in the @nderswerken program was the reduction of paper use. This KPI was acted upon via item 2, which implied working more digitally by the use of a tablet or laptop instead of paper. Since item 2 was part of an already existing program connected to the organization's strategy, its integration is an official target for the organization. The change item 2 implies is consistent with the identity and image of the organization, which rests on time- and place independent working and commitment to sustainability (see item 1) (INsite).

Item 2 was initiated by the Director-General (J) who got annoyed with the piles of paper he had to go through every week. As a result, the wish was expressed to do it differently, thereby reflecting positive attitudes from management towards the change and their support and commitment. The initiation of item 2 was also influenced by the fact that at that time, the Second Chamber in the Netherlands also started to work digitally (F). Simultaneously the possibilities were there to actually do it differently through the rise of iPads (K), indicating that the context of the integration was in part determined by changes in technology. Therefore, item 2 could be seen as the result of a misalignment between the organization's structure (based on working with paper) and environmental demands (working digitally) and therefore seems to represent a radical change.

For the ICT projects of the @nderswerken program, and thus for item 2, K was appointed as project leader. Under his supervision, three pilots of item 2 have been executed: From April to October 2012, three pilots (at the Employees Council, Board of Directors, Management Team Operations and Management Team Public Health and Care) have been executed, involving key figures from both the departments (staff members) as well as ICT. During the pilots, effective communication and collaboration took place between these key figures (K). They had expertise but lacked sufficient knowledge with respect to the safe use

of the devices. This was acknowledged but the implementation of the item was pursued anyway for reasons of strong strategic motivation.

The participating employees of the different departments were not actively involved in the process, while involvement of organizational members is important in achieving successful change. This may have been partly offset by the positive attitude that most participating employees had with respect to item 2. There was clear communication on the purpose of the pilots of item 2 and their process, preceded by planning and a vision⁸ and by means of a course of action. This vision and strategy also seemed well communicated via the pilot groups as well as via INsite (Intranet RIVM), presentations and evaluation documents.

From September 2012 until February 2013, a fourth pilot in building G22 (Management Team Public Health and Care) has been executed not covering paperless meetings, but *working paperless* in a more general sense. While paperless meetings were formulated as an official target in the @nderswerken program, *working paperless* in general was not. Still, it was pursued unofficially⁹. According to K, the fact that *working paperless* was not defined as an official target made it difficult to pursue it. All pilots have been evaluated and results showed among others that the number of printings decreased, people worked more efficiently and the paper archive was replaced by a digital archive (RIVM Insite). It was also found that employees participating in the pilots experienced item 2 as efficient and effective. These evaluations coupled with subsequent recommended adjustments show that monitoring, evaluating and adjusting were part of the integration process. Currently, every department within RIVM can apply for item 2, it has become a service that everyone can acquire via SSC Campus, the ICT services department of RIVM. More than half of all departments have applied for item 2, however, the extent to which they are actively using the service is unknown (SSC Campus).

Figure 8 visualizes how item 2 has evolved throughout the organization, starting with the initiation by the Director General, the set-up of the @nderswerken team and subsequently the appointment of a project leader for item 2. The arrows between the different departments imply either a two way or one-way interaction between the different departments concerning the pilots. When there is no arrow, this indicates that there was no interaction. *Table 6*

⁸ This vision concerns the overall program @nderswerken of which item 2 is a component.

⁹ For simplification, all four pilots have been classified under the heading of item 2.

summarizes the content, process and context related factors found influencing item 2.

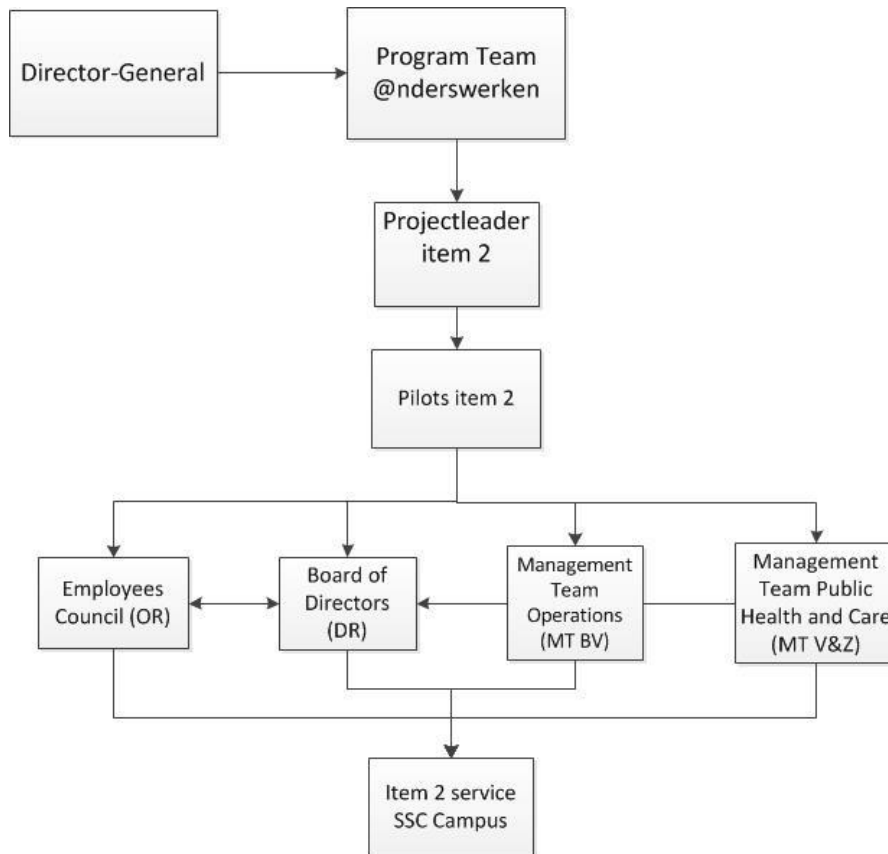


Figure 8 Visualization of how item 2 has evolved throughout the organization.

Table 6 Content, process and context related factors influencing item 2.

	<i>Factors influencing item 2</i>
Content	Radical change (top-down)
Process	Communication (of vision and strategy)
	Evaluation and adjustment
	Planning
	Lack of involvement of organizational members
	Positive attitude by organizational members towards the change
	Collaboration
Context	Technological changes
	Lack of knowledge
	Management support and commitment

3.2.2. Change agent

Along the process of item 2, J, K and F were identified as change agents. J for initiating the item, K and his direct colleagues of ICT (among others F) and the staff members of the pilot departments for managing the integration process of item 2. With respect to his role as project leader of item 2, K has been appointed as the change agent. From now on he will be referred to as CA2 (change agent 2).

The questionnaires and the interview have given insight in the worldview of CA2, particularly the characteristics / capabilities and behavior / activities that are reflected by this worldview. CA2 shows 31,3% elements of a post-conventional worldview range and 6,3% elements of a (pre)conventional worldview range as shown by *Figure 9*. As shown by *Table 7* and *Figure 10*, he shows specific characteristics and capabilities of the Expert, Achiever, Individualist, Strategist and Alchemist worldviews, most of them represented by the Achiever worldview. CA2 shows behavior / activities in line with all the above worldviews plus the Diplomat worldview. The Diplomat and Achiever worldviews are most reflected by the behavior of CA2. For the Diplomat worldview, this is interesting since no characteristics or capabilities were found to be reflected by this worldview. For the Alchemist worldview, it is worth noting that the behavior / activities of CA2 are more reflected than his characteristics / capabilities. In total, considering *Figure 10*, CA2 shows 35,9 % of characteristics / capabilities reflecting the post-conventional worldviews and 30 % reflecting the (pre)conventional worldviews. With respect to his behavior / activities, CA2 shows 40,1 % of them reflecting the (pre) conventional worldviews and 34,3 % reflecting the post-conventional worldviews.

With respect to his characteristics and capabilities (see the answers to questionnaire 1 and the interview in Appendix E and F), CA2 can be considered charismatic (Alchemist), reflective and responsible (Achiever), tolerant (Individualist), and a perfectionist (Expert). He stresses that he likes to work on a project in a team (52), thus indicating that he likes to collaborate (Strategist) (as is also reflected by questionnaire 1). CA2 can be considered self-aware (post-conventional), which is reflected by both questionnaire 1 as the interview. In the interview his self-awareness was clarified especially by reflecting on certain decisions he made or things he did or did not do but in hindsight thinks differently about (2,3). According to answers to questionnaire 1, CA2 handles conflicts well (post-conventional), however, his desire to be in control indicates a (pre)conventional worldview. CA2 is capable of thinking on the longer term (post-conventional), reflected by the interview: here he shows the capacity to think in longer terms by anticipating on a future work situation (17). CA2 is

capable of challenging and reframing issues (post-conventional) which he showed in the interview by realizing that work can be done more efficiently and by trying to convince other organizational members to look at a project from a business case perspective (18,19). CA2 seems to interact easily with people holding different viewpoints: He first tries to discuss his point of view with others but when they cannot be convinced he accepts the situation (24,25,26,27,28).

With respect to the behavior / activities of CA2 (see answers to questionnaire 2 and the interview in appendix E and F), he actively pursued transformation of the organization via his actions with respect to item 2 (Alchemist) and he was considered focused on actions and targets (Achiever). The latter was also reflected in the interview by him stating that he wants to achieve something in a project, that there has to be a goal (58,59). He handled resistance of colleagues well (Strategist), was focused on improving performance (Achiever) and on expectations and approval of others (Diplomat). CA2 was focused on development of knowledge around item 2 (Expert), he created new rules if he considered existing ones to be irrelevant (Individualist) and he confronted colleagues with their own way of thinking (Alchemist). CA2 considered sustainability an important subject, though he mainly focused on the planet dimension of sustainability and the image of the organization as a reason why sustainability should be pursued (Diplomat) (41,42,43). Finally, CA2 seems to have been personally committed (Individualist) to his work in item 2, stating that sustainability and the possibility for paper use reduction were two reasons why he liked working on the project (43). *Table 7* shows the overall image of CA2 based on the above information.

Table 7 Characterization of CA2 consisting of characteristics / capabilities and behavior / activities, based on results from questionnaire 1, 2 and the interview. Bold italics: elements found strongly applicable to the change agent. Congruence: similarity between view CA and view colleagues.

	<i>Characteristics / capabilities</i>	<i>Behavior / activities</i>	Congruence
CA2	Tolerant, responsible, charismatic, perfectionist, reflective, <i>likes to collaborate,</i> <i>self-aware, wants to be in control</i> Long-term thinking <i>Capacity to reframe / challenge existing ideas and assumptions</i> <i>Interacts well with people holding different viewpoints</i> Handles conflicts well	Focused on image organization with respect to sustainability Focused on expectations and approval of others Focused on knowledge development Focused on improving performance <i>Focused on actions and targets</i> Creates new rules if existing ones are considered irrelevant Personally committed Handles resistance of colleagues well Pursues transformation of the organization Holds up a mirror / confronts you with your own way of thinking	55%

Figure 9 shows the percentage of characteristics / capabilities corresponding to a post-conventional worldview, based on answers from questionnaire 1 and interview quotes.

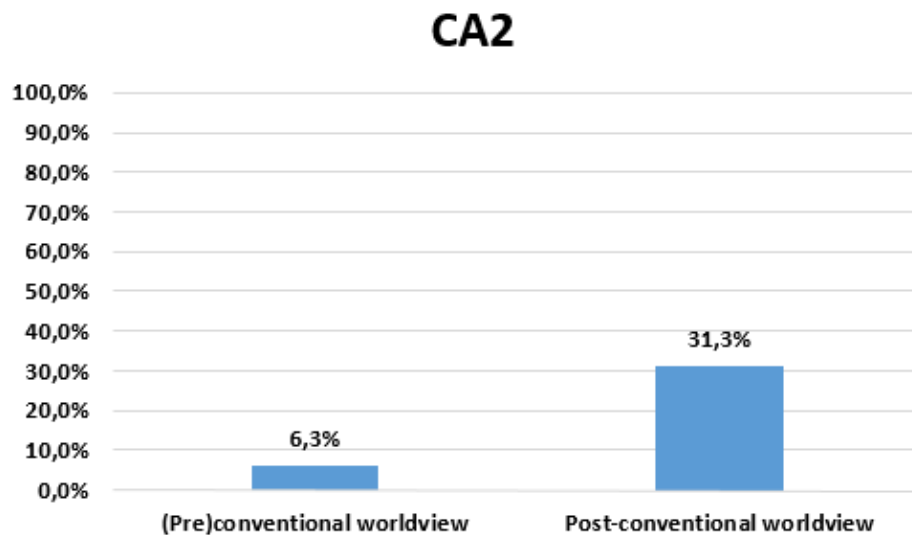


Figure 9 Percentage of characteristics / capabilities shown by CA2 corresponding to a (pre)conventional or post-conventional worldview based on the interview results and results of questionnaire 1.

Figure 10 shows the percentage of characteristics / capabilities and behavior / activities of CA2 that are reflected by each separate worldview. It has to be noted that elements integrated in Figure 9 correspond to a range of worldviews and cannot be allocated to the separate worldviews in Figure 10.

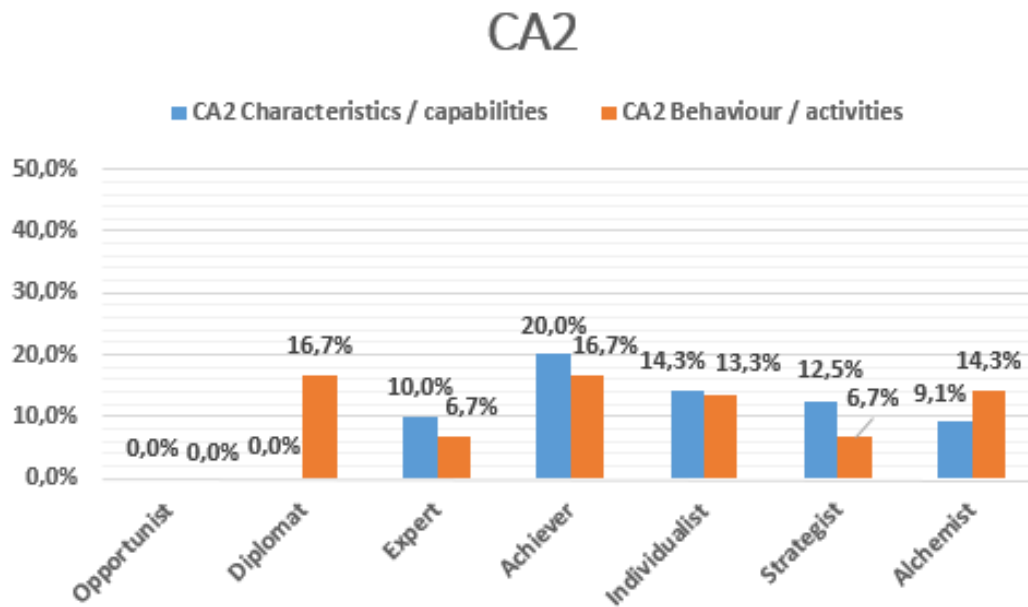


Figure 10 Percentage of characteristics / capabilities and behavior / activities shown by CA2 corresponding to each worldview based on results from questionnaire 1 and 2 and the interview.

3.2.3. Integration success

Figure 11 shows which Leapfrocs dimensions are covered by item 2. The level of success for this item was assessed at 65 %. To arrive at this percentage, the same method of assessment was performed as for item 1.



Figure 11 Level of corporate sustainability integration of item 2.

Item 2 has been defined as an *activity*. It covers the planet dimension of sustainability and partly by the prosperity dimension. Data for the people dimension were missing. Item 2 covers the whole PDCA cycle on the strategic and tactical level of the organization. No data were available regarding the PDCA cycle on the operational level. Item 2 covers the artifacts and values of the strategic and tactical level indicating that here it is part of the visible structures and beliefs and values of organizational members. However, data for the basic assumptions were missing. On the operational level, the item partly covers the artifacts and values, Again, data for the basic assumptions were missing. The pilots of item 2 have resulted in a service that departments can request for and the item is thus finalized. However, the integration on all time dimensions shows that it is still being implemented today and will be in the future.

3.3. Item 3

3.3.1. Context

Item 3 has been initiated by C in 2013 and started at the supporting services (e.g. ICT). It was found that the clients, the employees that do research (the primary process of RIVM), were not satisfied with these services. C expressed the ambition to increase this satisfaction, and item 3 was introduced as the tool to realize this ambition. The motivation for item 3 can therefore be seen as internal, the dissatisfaction of the internal clients. Like item 2, item 3 is officially part of organization's strategy and thus is an official KPI for the organization. It could therefore be seen as consistent with the identity and image of the organization. The implementation of item 3 is coupled with ROS (RIVM Organization System). With this system, all quality processes of RIVM are being enhanced/simplified. The method item 3 implies has four main targets: the continuous improvement of quality for the internal customer, eliminating waste, shortening lead-time and realising cost reductions (Routekaart 2020). Thus, central to item 3 is the customer's problem: this implies satisfying the customer, becoming more efficient (people will feel less time pressure) and saving on costs. What does not contribute to what the customer wants should be avoided. Though people are central to item 3, this is not reflected in the general perception of item 3 according to O.

Item 3 implies achieving continuous, small enhancements in processes with a team (N). This implies that integrating item 3 represents an incremental, continuous change of the organization. The projects related to item 3 also mainly impact the way people work and the way processes take place, a characteristic typical to incremental change. The effects of each project are being measured (Intranet). It seems that there is monitoring and evaluation and maintenance, support and improvement take place. Particularly worth noting is that item 3 projects usually result in a reorganization of roles and responsibilities of organizational members.

On the initiative of C, three groups of employees (in 2013, 2014 and 2015) were trained to become specialists in item 3. These specialists have the task to confront and enhance current processes thereby achieving a profit. Training of employees to become specialists in item 3 have resulted in the presence of specialized knowledge and expertise. N and O are responsible for the training item 3 experts¹⁰. While most organizational members participate in item 3 projects next to their regular job, N and O have set themselves fulltime to item

¹⁰ Formerly, this training was held by an external training bureau.

3. N coordinates item 3 projects (following C). N and O collaborate with P and Q on a weekly basis and together form the core team of item 3. Each week they discuss what needs to be done (which actions need to be undertaken in the coming weeks, how to deal with them, class material, which steps have been taken this year and what are steps for the coming year etc.). Their main focus is integrating item 3 within the organization via a bottom up approach because that is expected to be more effective than a top-down approach (N). According to N, this integration requires *a culture change* which is expected to take years.

Currently, different projects are running at different centres¹¹, including IDS, VLH, VSP, DVP and OBV. Now in 2015, people from the labs are being trained for item 3. Item 3 is expressed in a planning combined with objectives (change map) which are communicated. The ultimate objective is to spread the item 3 principle from operations and services to the entire organization of RIVM by 2017. This planning and combined objectives are communicated via e.g. intranet, inwiki¹² and flyering in the cafeteria, specifically on the why and how of item 3. However, as mentioned by the interviewees, this communication is not effective. This communication seems to lack a sense of urgency and explicit communication of the benefits of item 3. The integration of item 3 also seems hampered by a lack of full management support and commitment, though it was initiated by someone with a strategic position. It is therefore actively attempted by Q to involve management (besides C) in item 3.

Figure 12 visualizes how item 3 has evolved throughout the organization. It was initiated by the deputy director general, who ordered for the training of specialists. Some of those specialists are now part of a core team (including the coordinator of item 3) leading the different projects that take place within different departments of the organization, other specialists just take part in projects concerning item 3. Between the core team and other specialists, interaction takes place, hence the two-way arrow. *Table 8* summarizes the content, process and context related factors found influencing item 3.

¹¹ Sometimes projects cover multiple departments, but item 3 implies looking at the components and not the entire chain of the process.

¹² Communication applications for case study organization.

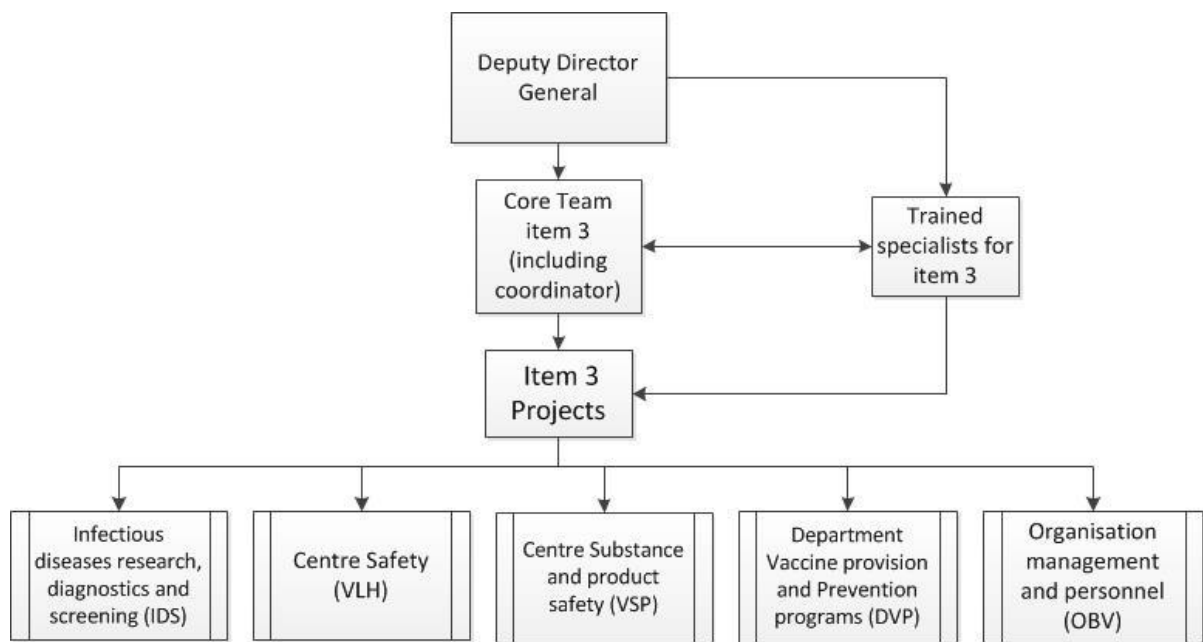


Figure 12 Visualization of how item 3 has evolved throughout the organization.

Table 8 Content, process and context related factors influencing item 3.

	<i>Factors influencing item 3</i>
Content	Incremental change (bottom-up)
Process	Official strategy
	Planning
	Evaluation / monitoring / measuring and improving
	Communication (On why and how, not on urgency or benefits)
	Reorganization of roles / responsibilities
Context	Lack of full management support and commitment
	Presence of specialized knowledge
	Consistency with image and identity of organization

3.3.2. Change agent

For item 3, C was identified as a change agent for his initiating, triggering role at the start of the item, N for her current coordinating role with respect to the item and person O and Q as being part of the core team around item 3. With respect to her role as project coordinator, N has been selected as the change agent for this research. From now on she will be referred to as CA₃ (change agent 3).

The questionnaires and the interview have given insight in the worldview of CA₃, particularly the characteristics / capabilities and behavior / activities that

are reflected by this worldview. CA₃ shows characteristics/ capabilities of different worldviews as well as a range of worldviews (see *Table 9, Figure 13 and 14*). She shows 43,8 % of characteristics / capabilities reflecting a post-conventional worldview and 6,3 % reflecting a (pre)conventional worldview. With respect to each separate worldview, her characteristics /capabilities are reflected by the Achiever, Individualist, Strategist and Alchemist worldviews, of which the Individualist and Alchemist worldview are most reflected. However, her behavior / activities are reflected by a wider range of worldviews, including the former mentioned worldviews plus the Diplomat and Expert worldview. Her behavior is most reflected by the Individualist and Achiever worldview. In total, considering *Figure 14*, CA₃ shows 45 % characteristics / capabilities reflecting the post-conventional worldviews and 10 % reflecting the (pre)conventional worldviews. For her behavior / activities this division is 47,6 % and 38,3 % respectively.

With respect to her characteristics and capabilities (see the answers to questionnaire 1 and the interview in appendix E and F), CA₃ can be considered tolerant (Individualist), charismatic (Alchemist), open minded (post-conventional) and self-aware (post-conventional). The latter was shown by questionnaire 1 and the interview (4,5,6): she shows self-awareness in that she is aware of her way of thinking, the skills she has and she is aware of a change in her own mind-set that was needed in order for her to deal with item 3. She can be considered empathic (Achiever / Alchemist) (57), in that she is able to understand other people's emotions. She likes to collaborate (Strategist), indicated by both questionnaire 1 and the interview (53,54). CA₃ is well aware of conflicting viewpoints, that everybody sees things from their own perspective (33,34) and can interact well with people holding conflicting viewpoints and handles conflicts well. She seems to understand the resistance of people and how to deal with it in a calm way (36,37,38). CA₃ seems very open to feedback/ suggestions from others, shown by the answers to questionnaire 1 and by the interview. Particularly, this is shown by her desire to create openness in the group and eliminating judgement in order for everyone to openly discuss each other's work (29). On the other hand, when confronted with feedback from a colleague or when her own suggestion is not accepted by the group, she shows signs of difficulty handling it (30,32). Still, she recognizes that is good if someone confronts her with her behavior, showing that she in fact is open to feedback from others (31). CA₃ seems to handle uncertainties well, indicated by both questionnaire 1 as the interview: if there is a situation in which there is a problem but the exact data are not known, she accepts the uncertainty (22). She shows some signs of systems thinking by linking sustainable employability (less

absenteeism) to the greater good for society (15). All the above elements indicate a post-conventional worldview. However, from the answers to questionnaire 1 it became clear that she wants to be in control, indicating a (pre)conventional worldview.

With respect to her behavior / activities (see answers to questionnaire 2 and the interview in Appendix E and F), CA3 seems well capable of dealing with people's resistance to change (as also reflected by the interview), and she is capable of creating shared visions among people with different worldviews (Strategist). CA3 develops creative and original solutions, creates new rules if existing ones are considered irrelevant and is personally committed to her work in item 3 (Individualist). She is focused on actions and targets as well as improving performance (Achiever). With her actions in regards to item 3, she actively pursues transformation of the organization and she is considered the type of person that confronts other people with their way of thinking (Alchemist). Her focus on expectations and approval of others indicate a Diplomat worldview. CA3 approaches item 3 from a specialized perspective (Expert). CA3 mainly refers to the organization in her view on sustainability, indicating a Diplomat worldview but also links to implications of sustainability for wider society, indicating a more integrative focus on sustainability. *Table 9* shows the overall image of CA3 based on the above information.

Table 9 Characterization of CA₃ consisting of characteristics / capabilities and behavior / activities, based on results from questionnaire 1, 2 and the interview. Bold italics: elements found strongly applicable to the change agent. Congruence: similarity between view CA and view colleagues.

	Characteristics / capabilities	Behavior / activities	Congruence
CA ₃	<p>Tolerant, open-minded, self-aware, charismatic, empathic, likes to collaborate, likes to receive feedback, wants to be in control Enhanced system's consciousness Handles uncertainties well Awareness of conflicting viewpoints Interacts well with people holding different viewpoints</p>	<p>Focused on expectations and approval of others Focused on knowledge development Approached item 3 from a specialized perspective Focused on actions and targets Focused on improving performance Creates new rules of existing ones are considered irrelevant Develops creative and original solutions Personally committed Handles resistance of colleagues well Capable of creating shared visions among people with different viewpoints Holds up a mirror / confronts you with your own way of thinking Pursues transformation of the organization</p>	50%

Figure 13 shows the percentage of characteristics / capabilities corresponding to a post-conventional worldview, based on answers from questionnaire 1 and interview quotes.

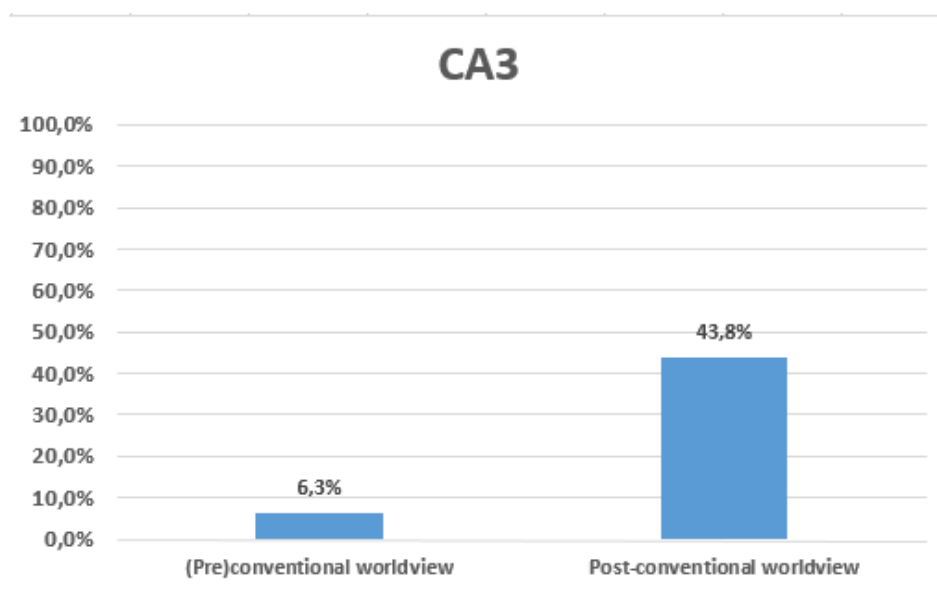


Figure 13 Percentage of characteristics / capabilities shown by CA₃ corresponding to a (pre)conventional or post-conventional worldview based on the interview results and results of questionnaire 1.

Figure 14 shows the percentage of characteristics / capabilities and behavior / activities of CA1 that are reflected by each separate worldview. It has to be noted that elements integrated in Figure 13 correspond to a range of worldviews and cannot be allocated to the separate worldviews in Figure 14.

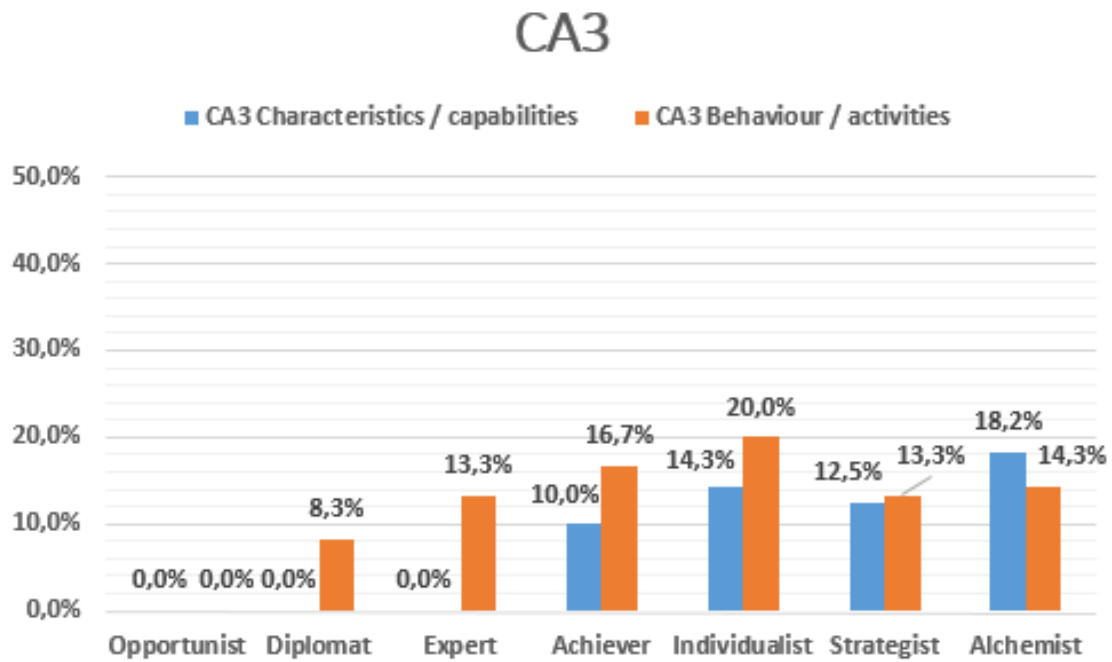


Figure 14 Percentage of characteristics / capabilities and behavior / activities shown by CA3 corresponding to each worldview based on results from questionnaire 1 and 2 and the interview.

3.3.3. Integration success

Figure 15 shows which dimensions of Leapfrocs are covered by item 3. The level of success for this item was assessed at 48%. To arrive at this percentage, the same method of assessment was performed as for item 1 and 2.



Figure 15 Level of corporate sustainability integration of item 3.

Item 3 has been defined as an *activity*. It partly covers the planet and prosperity dimensions of sustainability. Data for the people dimension are missing. Item 3 covers the entire PDCA cycle in the strategic level of the organization. For the tactical level, most data concerning the PDCA cycle are missing, only the Plan phase is covered. The Do, Check and Act phases are not covered in the tactical level of the organization. On the operational level, only the Plan and Do phase are partly covered, the Check and Act phases are not. The item does not seem to be completely covered in the organizational culture of the organization. On the strategic and operational level, item 3 is covered by the artifacts and values, indicating that it is part of the visible structures and people's values and beliefs here, though data are missing for the basic assumptions. On the tactical level, all data concerning the organizational culture are missing. Item 3 does not cover the basic assumptions of the organizational culture on any level. It is reflected by all time dimensions, indicating that it has started in the past and will be continued in the future.

3.4. Integrated results

For each integration item, several factors were found of influence on the items. While item 2 reflects management support and commitment, item 1 and item 3 did / do not receive enough support from the strategic level of the organization. Item 1 and 3 represent an incremental change, bottom-up implemented, while item 2 represents a radical change with a strong top down motivation. Item 1 seems to have been confronted with the most factors likely to have negatively influenced the integration success. Besides a lack of management support, these factors include a lack of effective communication, monitoring and evaluation.

Each of the change agents show some specific elements which reflect their worldview, but overall, all change agents can be described as tolerant, collaborative and self-aware and all three interact well with people holding different viewpoints. They are all considered to be focused on expectations and approval of others, focused on knowledge development around the respective items, pursue transformation of the organization with respect to their actions in the respective items and handle resistance of colleagues well. Only CA₃ is capable of creating shared visions among people holding different viewpoints, according to her colleagues. Interestingly, all change agents reflect to a large extent the Individualist worldview in their characteristics and capabilities. While CA₁ shows most characteristics / capabilities of a post-conventional worldview *range*, the share of each separate post-conventional worldview also indicates that of all three change agents, she shows most characteristics / capabilities of post-conventional worldviews. However, with respect to the change agents' behavior and activities, CA₃ seems to show more behavior/activities related to the post-conventional worldviews than do CA₁ and CA₂.

With respect to the integration success, it is worth noting that item 1 and 3 both cover to some extent the PDCA cycle on the operational level of the organization, while item 2 does not cover the PDCA cycle here at all. The incremental nature of the change item 1 and 3 imply could be related to this, since incremental change often impacts the operational part of the organization. The top-down implementation of item 2 could partly explain why the PDCA cycle is not covered on the operational level of the organization. All items to some extent cover the planet dimension of sustainability, which was also reflected by the main focus of each change agent. All items cover the PDCA cycle on the strategic level to some extent, hence complete absence of management support does not seem to be the case for item 1 and 3. All items cover at least the artifacts and values of the organizational culture on each organizational level to some extent, on the strategic level they are completely covered. This indicates that CS is being integrated in the organizational culture,

but does not resonate in the entire organization. None of the items cover the basic assumptions on the strategic and tactical level of the organization, which is in coherence with the lack of management support for item 1 and 3, but does not coincide with the strong strategic motivation reflected by item 2. While item 2 and 3 cover all three time dimensions and item 1 only the present and future time dimension, their entire timespan is longer than that of item 1. A longer timespan could mean that items 2 and 3 have had more opportunity to develop and become successful in contributing to the CS integration process than item 1. Another issue concerning the items was the level of specificity. While item 2 can be considered a highly specific component of a broader project, item 3 turned out to be covering multiple projects. This difference in scope might have influenced the assessment of the item's success.

When comparing all the different data a few things can be noticed. For item 1, the most striking part of its success is the full coverage of the item by the PDCA cycle in the tactical level of the organization. CA₁ was found to show most characteristics and capabilities reflecting an Achiever or Individualist worldview, while her behavior / activities were more evenly reflected by all the different worldviews. While most factors other than the change agent's worldview are likely to have had a negative influence, the collaboration between the coordinator of item 1 and the different departments has likely positively influenced the item. This could indicate that, for successful integration of CS (with regards to the PDCA cycle) in the tactical level of the organization, a change agent is needed who shows particular characteristics / capabilities of an Achiever or Individualist (being tolerant, responsible, reflective, empathic and valuing relationships over achievements) and who is well capable of collaboration and stimulating it between organizational members. Finally, considering that most identified factors seem to have negatively influenced the success of item 1, the relatively high success of the item might indicate that it is more related to the change agent's worldview than to the context of the item.

For item 2, it was worth noting that the success of the item was determined mainly by the complete coverage of the PDCA cycle on the strategic and tactical levels of the organization. Here it seems likely that the strong management support and commitment and the top-down approach the item reflected had an influence. On the other hand, the item does not cover the PDCA cycle in the operational level, likely since it only took place in the strategic and tactical level. For item 2, fewer factors other than the change agent's worldview were found of influence but most of them seem to have positively influenced the change. Factors which were of positive influence specific to item 2 were good communication, the initial positive attitude of the organizational members

towards item 2 and good collaboration. These could form a reason why the item scores well with respect to its integration. CA2 shows a more evenly distribution of worldview characteristics and capabilities than CA1. Worth noting, however, is that he shows, in comparison to CA1 and CA3 a higher percentage of behavior / activities reflecting the Diplomat worldview. Specifically, a focus on expectations and approval of others and a focus on the image of the organization.

For item 3, it was worth noting that on the strategic level the PDCA cycle is completely covered, while on the tactical level, it is not completely covered. Absence of the Check and Act phases in the tactical level could imply that here, no awareness exists of the processes on the operational level, however, the description of the item's context shows otherwise. The organizational culture on the tactical level is not completely covered. While item 3 was initially motivated top down, a bottom up approach is being taken to integrate it. This is not reflected by the PDCA cycle and organizational culture on the operational level of the organization. The fact that monitoring and evaluation takes place while at the same time the Check and Act phases of the PDCA cycle on both the tactical and operational levels are not covered, gives contradictory results. A lack of integration in the organizational culture on all levels might relate to the lack of effective communication organization wide about item 3. CA3 shows an evenly spread distribution of characteristics / capabilities and behavior / activities of all worldviews, however she does not show specific characteristics of the Opportunist, Diplomat or Expert worldviews. Also worth noting is that she shows a higher percentage of characteristics of the Alchemist worldview than CA1 and CA2 (Charismatic and empathic). Overall, few factors of influence were found for item 3 and most could be interpreted as positively influencing the item.

Overall, it seems that a CS integration process which is more negatively influenced by its context could benefit from a change agent with an Achiever or Individualist worldview which is especially reflected by his or her characteristics and capabilities (item 1). On the other hand, a process which is more positively influenced by its context could benefit more from a change agent with a less specific worldview which evenly reflects characteristics / capabilities and behavior / activities (item 2 and 3).

4. Discussion

4.1. Discussion of results

Different theoretical concepts have been linked together in this research to shed light on which worldviews of change agents contribute to CS integration. On an aggregated level, management support formed a common denominator in that it influenced all items, either negatively (in case of a lack of support) or positively. Different authors referred to the presence of management support as important for organizational change success (Stelzer & Mellis, 1998; Fernandez & Rainey 2006; Herron & Hicks, 2008). Another common denominator was a lack of integration on the basic assumptions for all items. The role of the basic assumptions in successful change in organizational culture was already stressed by Schein (2010), as the basic assumptions need to be altered once a leader or change agent forms or changes the culture. Finally, all change agents seem to show a relatively large percentage of characteristics / capabilities of the Individualist worldview. When considering the characteristics / capabilities as reflected by the Individualist worldview (column A5, Table 2), it can be noticed that this worldview, most explicitly of all worldviews, reflects a focus on other people (e.g. tolerant towards others, valuing relationships according to Vincent et al., 2015 and interested in unique expressions of others according to McEwen & Schmidt, 2007 and Divecha & Brown, 2013). Effective organizational change implies embedding the change in the organization's culture (Stelzer & Mellis, 1998; Fernandez & Rainey, 2006), meaning that organizational members need to change their daily routines and behavior (Fernandez & Rainey, 2006). It is likely that a worldview implying a focus on people and by extension their behavior is most likely to contribute to successful CS integration. Other characteristics / capabilities and behavior / activities that reflect a role in changing behavior are being able to interact with people holding conflicting viewpoints (being able to collaborate in general), creating shared visions among them and handling conflicts and resistance. This also counts for being able to reframe and challenge issues, which could in turn contribute to creating shared visions among people. Finally, confronting people with their way of thinking and being empathic (understanding other people's feelings), being open minded and inviting to feedback also imply an influence on people's behavior (see framework by Rooke & Torbert, 2005, Table 2). These characteristics / capabilities do not all correspond to an Individualist worldview, but to Strategist, Alchemist or the range of post-conventional worldviews.

Though the above tends to lead to the conclusion that postconventional worldviews are more beneficial for CS integration, specific to the PDCA cycle of

the organization, more conventional worldviews, specifically the behavior and activities they reflect seem to have a potential to contribute to CS integration. For example, focusing on actions, targets and improving the performance of the organization (indicating an Achiever worldview, Boiral et al., 2009; Brown, 2011) can be seen to contribute to the PDCA cycle of the organization and focusing on knowledge development (indicating an Expert worldview, Boiral et al., 2009; Brown, 2011) indirectly implies a contribution to communication and collaboration (sharing knowledge) which in turn could positively influence the integration of corporate sustainability (Stelzer & Mellis, 1998; Walker et al., 2007). Thus, it seems that different dimensions of the integration process are benefited by different worldviews.

4.2. Discussion of theory

The chosen theory to describe the change agent has shown some limitations. First, some characteristics or behaviors correspond to more than one worldview for example characteristic 'empathic' has been assigned to both the Achiever (A4) as the Alchemist worldview (A7). Second, while Cook-Greuter (2004) and Boiral et al. (2009) stress that individuals with higher developed worldviews still have the benefits of lower developed worldviews, the content of *Table 1* shows otherwise. For example, Opportunists have the skill of seizing opportunities and focusing on short term goals while Strategists actually show the risk of losing sight of the short-term gains (Boiral et al., 2009; Brown, 2011). The issue concerned with assuming that later developed worldviews also include the benefits of the lower developed worldviews is also expressed by the capability 'awareness of inner conflicts'. This capability is specifically mentioned as corresponding to the Individualist worldview (A5) (Divecha & Brown, 2013; Vincent et al., 2013,2015), it is not included in the Strategist (A6) or Alchemist (A7) capabilities. One can only assume, however, that if someone is able to *cope with* or *reconcile* inner conflicts he or she is also *aware* of them, thus indicating that the later stages also reflect the earlier stages' benefits. However, in this specific case this assumption does not seem to be supported by the theory. Third, a lack of clarification exists on the difference between 'being able to cope with inner conflicts' (A6, Strategist) or 'being able to reconcile inner conflicts' (A7, Alchemist). Fourth, though the theorists (Divecha & Brown, 2013; Vincent et al., 2013,2015) imply that all the above capabilities apply to the *range* of post-conventional worldviews and thus to both the Individualist, Strategist and Alchemist worldview, they also mention them as specific to a worldview. Thus, a clear delineation of which capabilities belong specifically to which worldview is lacking.

As mentioned by Visser & Crane (2010), research on CS has focused largely on the organizational level instead of the individual level. Limiting the analysis to the organizational level has the inherent limitation that the results the implementation of the framework delivers are too abstract. The Leapfrocs framework also remains on the higher abstraction level, which is also reflected by the relatively ambiguous description of the types of integration items. While an activity or result can be seen as an element that can be reflected by all Leapfrocs dimensions, it is more difficult to see a thought or an interaction go through a Deming Cycle without it transforming to an activity. This implies that not all types of integration items, as they are defined today, can be used to assess the level of corporate sustainability integration or to find change agents. It also implies that integration items are not steady state elements and are prone to development from one stage to another. This proneness to development also makes it difficult to draw hard conclusions on the level of success.

For this research, it was assumed that the worldview of the change agent and the other factors influencing CS integration were two separate variables, each with their own level of influence. However, it was found that the process related factors directly or indirectly determine how the change agent deals with the integration process (e.g. communication of a vision). Content and context related factors do not seem to be influenced by the change agent, however, when aware of them, he or she can take them into account, thereby indirectly reflecting them in his or her behavior and activities. Though several other studies (e.g. Rooke & Torbert, 2005; Brown, 2012) have shown that a *sustainability leader* or change agent is most benefited by a post-conventional worldview, there are context specific factors which determine which way of thinking is most beneficial (e.g. Boiral et al., 2009). These factors include the culture, expectations of different stakeholders, external pressures, management attitudes and the economic stability of the organization (ibid). According to the authors, these factors may very well mean that someone with a more conventional worldview is better adapted to the specific context of the organization (Boiral et al., 2009). Thus, the process of CS integration seems to be influenced by factors other than the change agent's worldview, while the value of the worldview on itself is also determined by other factors. This indicates that the change agent's worldview and the other factors influencing CS integration are intertwined rather than independent variables.

4.3 Discussion of methods

Since little research has been performed on identifying / selecting change agents, their selection in this specific research remains subjective. It is worth noting that most empirical research on the worldviews of sustainability leaders

has been largely based on the selection of participants that already fulfilled a formal leadership position (e.g. Brown, 2012; Schein, 2014; Boiral, Baron & Gunnlaugson, 2014), thereby not considering those organizational members that have the potential to be change agent or sustainability leader but do not have a formal position.

Not in all interviews, the questions led to insight in a particular element. On the other hand, in some interviews the questions led to insights that were not at first intended by the questions. This was the case for, for example *systems thinking* and *long-term thinking*, elements that beforehand were considered too difficult to identify with the chosen method. With respect to the analysis of the results, it has not been taken into account that divergence among answers to both the questionnaires and the interviews could be the result of different interpretations to the questions. Different interpretations by the participants might have led to incorrect answers and as a consequence led to incorrect interpretations by the researcher.

The results of the research depended on the variety and number of elements that were reflected by both the questionnaires and the interview. Each change agent might have shown other characteristics / capabilities or behavior / activities that were not revealed due to the chosen method or simply because the data collection was done at a particular moment in time.

Aggregating the main elements corresponding to a post-conventional worldview in a separate table (Table 2) made it difficult to make an overall analysis of all the different elements reflected by the questionnaires and the interview. That is, these elements cannot all be specified to specific post-conventional worldviews (either Individualist, Strategist or Alchemist), making it difficult to use these elements to obtain a specific image of each post-conventional worldview. Therefore, while the elements from *Table 1* could easily be expressed as a percentage of the total elements per worldview, *Table 2* covered a range of worldviews and could only be interpreted as an independent number of elements besides those from *Table 1*. Thus, elements from *Table 1* and *Table 2* could not be taken together, making it difficult to draw hard conclusions on the actual percentage the change agent showed of each worldview.

Theory on other factors influencing the CS integration besides the change agent worldview was not explicitly included in the methods for this study. Though data concerning the context of each integration item did provide insights in elements of this part of the theory, they were not explicitly questioned in the conversations with involved employees. In hindsight, it could have been more

explicitly included in the methods by means of more focused questions. These could have led to stronger or more transparent results concerning the context of each item and therefore to a clearer image of the factors influencing CS integration. For reasons of simplification, the factors influencing CS integration were interpreted as all having the same negative or positive influence on the integration success. However, it is very likely that in reality one factor's scope of influence is larger than another. By not taking this variability into account, the aggregated interpreted influence of the factors could have been different than when this variation was taken into account.

Overall, data collection and analysis were approached by means of interpretive analysis. Being present in the organization has given the researcher an extensive body of empirical data, however, the theory used has not been developed enough nor linked together yet, giving extra weight to the empirical data that were obtained. While worldviews or stages of development are commonly determined by sentence completion tests this method offered a novel yet challenging way to accomplish the same.

4.4. Recommendations for further research

Further research could focus on strengthening the theoretical description of the worldviews. This should include specifying each worldview with specific characteristics / capabilities and behavior / activities so to make sure they can be distinguished properly. This would also imply to leave out elements that apply to more than worldview (empathic) or that seem to widely applicable to be able to say something about a specific worldview (e.g. tolerant, respectful). The difference between resembling elements such as being able to *cope with* inner conflicts or being able to *reconcile* inner conflicts should be clarified. Finally, research could focus on specifying which benefits of earlier worldviews are also reflected by later worldviews and which are not. All the above would enhance the process of categorization of change agents or sustainability leaders and by extension clarify their worldview *profile*.

Research could also focus on the process of identifying change agents, specifically by broadening the view on who could be considered as a change agent. This would imply looking at individual organizational members and their characteristics / capabilities and behavior rather than their formal organizational roles or functions. Doing so could provide a broader range of possible change agents and give more insights in which type of change agent is suitable in which context.

With this research there was an opportunity to zoom into the individual level of the CS integration process, thereby providing the benefit of giving more concrete insights into how the process actually takes place and which factors are influencing it. Therefore, more research on the topic of corporate sustainability should be geared towards the individual level instead of the organizational level. Specific to the Leapfrocs model, further research could focus on including the currently lacking individual level to the wider organizational levels as they are currently defined (strategic, tactical, operational). This could give more insights in the basic assumptions of the organizational culture on the individual level and, by extension, on the organizational level. The Leapfrocs model could also benefit from a clearer delineation and definition of the different types of integration items, as it currently fails to take into account the developmental nature of the items. As theory clarified that successful CS integration requires a change in organizational culture and basic assumptions are the essential part of the culture, it might be rewarding to focus attention on the culture dimension of Leapfrocs, especially how CS could be integrated into the basic assumptions.

With respect to the combination of the three theoretical fields (worldviews, CS integration and factors influencing organizational change), more research could be performed on their specific interactions, thereby clarifying the specific implications of each of the theories for corporate sustainability integration.

5. Recommendations to the case study organization

The change agents currently identified at RIVM all reflect tolerance and self-awareness in their worldviews and a collaborative nature and can interact well with people holding different viewpoints. The success of CS integration seems to be influenced not only by the worldview of the change agent but also by factors such as the presence of management support, communication, collaboration, involvement of organizational members and evaluation and monitoring. In addition, interaction takes place among these factors and between these factors and the worldview of the change agent, therefore, the change agent cannot be seen in isolation from the context of the change effort. It is recommended that RIVM shifts the focus from first identifying a change agent, or sustainability coordinator, to first assessing the background conditions or content, process and context related factors of each CS process. This should be combined with assessing the nature of the integration process (which parts specifically require attention, e.g. the culture or PDCA cycle of the organization). From thereon, a change agent should be identified whose worldview and thus characteristics / capabilities and behavior / activities are in coherence with the background conditions and nature of the CS process.

6. Conclusion

This research has given insights in which organizational members connected to the process of CS integration could be identified as change agents, their worldview and combined characteristics / capabilities and behavior / activities. It has also shown insights in other factors influencing CS integration. While integrating CS into the organizational culture seems to reflect an important role for post-conventional characteristics / capabilities and behavior / activities of the change agent, covering the PDCA cycle of the organization indicates more necessity for a change agent showing behavior /activities reflecting a conventional worldview. In an attempt to answer the research question as stated in the introduction: *Which worldviews of change agents for corporate sustainability contribute to the success of corporate sustainability integration?* it should be noted that the case studies did not give conclusive evidence of a relationship between the worldview of the change agent and the level of success of CS integration. It can be assumed, however, that several worldviews can contribute to the success of CS but that the extent to which the corresponding characteristics / capabilities and behavior / activities are conducive depends on the interaction between the change agent worldview, the content, process and context related factors that simultaneously influence the CS integration process and the different Leapfrocs dimensions of the integration process.

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Appendix A. Interview worldviews

1. **Kun je iets vertellen over je loopbaan?**
Hoe lang bent u werkzaam bij het RIVM?
Hoe lang bent u werkzaam in deze functie?
Strategisch, tactisch, operationeel?
2. **In hoeverre wijkt het werken aan de hand van item X af van de bestaande/ geaccepteerde manier van werken binnen RIVM? (F2)**
3. **Heb je daarvoor bepaalde persoonlijke aannames/ ideeën moeten aanpassen? (F2)**
Zo ja, hoe gaat u daarmee om? Zo nee, hoe zou er in het geval dat mee om gaan?
4. **Welke aspecten van (je werk rondom) item X motiveren je het meest? (C5)**
5. **Wat is volgens jou de impact van je werk in item X? Of welke impact hoop je te hebben?**
6. **Zijn er momenten geweest (wat betreft item X) dat je een keuze moest maken zonder alle informatie te hebben die u idealiter zou willen hebben voor het maken van die keuze? (F4, F5)**
Zo ja, hoe gaat / ging u daarmee om?
7. **Heb je wel eens iets moeten doen waar je het eigenlijk niet mee eens was? / Heb je wel eens een keuze moeten maken waar je niet achter stond? (E1,E2,E3) Zo ja, hoe ging je daar mee om?**
8. **Op wat voor manier wordt er samengewerkt m.b.t. item X?**
9. **Hoe ga je om met collega's die niet dezelfde zienswijzen hebben als jij? Beïnvloedt dat de omgang met elkaar/werkzaamheden? (G1,G2,G3,G4,G5,G6)**
10. **Wat is de relatie tussen item en duurzaamheid volgens jou? ¹³ Waarom zouden we volgens jou duurzaamheid moeten nastreven? (Wat vindt u van duurzaamheid? Wat is uw definitie van/ visie op duurzaamheid?) (G7)**
11. **Wilt u nog iets aanvullen op de antwoorden die u tot nu toe gegeven hebt?**
12. **Heeft u nog vragen wat betreft het onderzoek?**

¹³ This question was only asked to the change agents of item 2 and 3.

Appendix B. Questionnaire characteristics / capabilities

Code	Characteristics / capabilities	<i>Zeer mee eens</i>	<i>Mee eens</i>	<i>Niet mee eens / niet mee oneens</i>	<i>Mee oneens</i>	<i>Zeer mee oneens</i>
A1	Veeleisend					
A5	Tolerant					
A1	Impulsief					
A2	Conventioneel					
A7	Charismatisch					
A7	Wijs					
A3	Perfectionistisch					
A4	Verantwoordelijk					
A4	Bedachtzaam					
G4	Ruimdenkend					
E1	Zelfbewust					
A2	Wil er graag bijhoren					
A3	(Ik) wil graag uniek zijn					
A6	(Ik) werk(t) graag samen					
A5	(Ik) vind(t) relaties belangrijker dan prestaties					
G5	(Ik) ontvang(t) graag feedback					
A1 - A4	(Ik heb) (heeft) graag de touwtjes in handen					
G3	(Ik) (ga)at goed om met mensen die andere opvattingen hebben					
G6	(Ik) ga(at) goed om met conflicten					
F4	(Ik) ga(at) goed om met onzekerheden					

Appendix C. Questionnaire behavior / activities

Code	Behavior / activities	<i>Zeer mee eens</i>	<i>Mee eens</i>	<i>Niet mee eens / niet mee oneens</i>	<i>Mee oneens</i>	<i>Zeer mee oneens</i>
D2	Persoon X doet vaak uitspraken die niet in lijn zijn met zijn/haar gedrag					
B2	Persoon X is gefocust op verwachtingen en goedkeuring van anderen					
B3	Persoon X benadert item X vanuit een gespecialiseerd perspectief					
C3	Persoon X focust op de ontwikkeling van kennis omtrent item X					
B5	Persoon X ontwikkelt creatieve en originele oplossingen					
B1	Persoon X neemt maatregelen die gefocust zijn op de korte termijn					
C7	Persoon X streeft met zijn/ haar acties t.a.v. item X actief transformatie van de organisatie na					
C4	Persoon X is gericht op acties en doelen					
C6	Persoon X is instaat om een gedeelde visie te creëren tussen mensen met verschillende zienswijzen					
C6	Persoon X kan goed omgaan met weerstand/ sceptische houding van collega's					
B4	Persoon X is gericht op prestatieverbetering					
B1	Persoon X is alleen betrokken bij item X omdat het hem persoonlijk beïnvloedt					
D5	Persoon X creëert nieuwe regels als bestaande niet relevant worden geacht					
B7	Persoon X is het type dat je een spiegel voorhoudt / je confronteert met je eigen denkwijzen					

Appendix D. List of people involved in integration items

- A = Head of Department Sustainability, Drinking Water and Soil
- B = Head of Purchasing performance center, customer and supplier management
- C = Deputy Director General
- D = Staff Chief General and Technical service
- E = Deputy Head Human Resource Management
- F = Information Manager
- G = Project Leader (Nieuwe Huisvesting)
- H = Project Leader (Nieuwe Huisvesting)
- I = Program leader @nderswerken
- J = Director General
- K = Project Leader / Lean professional
- L = Secretary OR
- M = Application manager
- N = Lean Coordinator
- O = Project leader, manager (Lean)
- P = Head Secretariat and Management
- Q = Consultant / Program manager ROS-Lean

Appendix E. Answers to questionnaire 1 and 2

Characteristics / capabilities ¹⁴	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Demanding		E1 E3	CA1 CA3 E2 CA2 E1 E2 E3	E1 E2 E3	
Tolerant	CA1 E2 E1 E2	E3E1 CA3 E1 E2 E3 CA2 E3			
Impulsive		CA1 E2 E1	E3 E3 E3	E1 CA3 E2 CA2 E1 E2	
Conventional			CA1 E1 E2	E3E1 E2 CA3 E1 E2 E3CA2 E3	
Charismatic	E3	CA1 E1 E1 E2 E1 E2 E3	E2 CA3 CA2	E3	
Wise		CA1 E1 E1 E3 E1 E2	CA3 E2 CA2 E3 E3	E2	
Perfectionist		CA1 E1 E3 CA2 E1 E2	E2 E3	E1 E3 CA3	E2
Responsible	CA1 CA2 E3	E1 E2 E3 CA3 E1 E2 E1 E2 E3			
Reflective	E1 E2	CA1 E1 E3 CA3 E2 CA2	E2 E1 E3	E3	
Open minded	CA1 E2	E1 CA3 E1 E2 E3 CA2 E3	E1 E2 E3		
Self-aware	E2	E1 E3 CA3 E1 E2 E3 CA2E1 E2 E3	CA1		
(I) want(s) to belong		E1 E2 CA3 E1 E1 E2	CA1 CA2 E3	E3E2	E3
(I) want(s) to be unique	E2	CA1 CA3 E1 E2	E2 CA2 E3 E3	E1 E1	E3
(I) like(s) to collaborate	CA1 E1 E2 E3	CA3 E1 E2 E1 E2			

¹⁴ CA1 = Change agent Sustainability Policy, E1 / E2 / E3 = Colleagues of CA1; CA2 = Change agent Paperless meetings, E1 / E2 / E3 = Colleagues of CA2, CA3 = Change agent Lean, E1 / E2 / E3 = Colleagues of CA3

	CA2 E3	E3			
(I) value(s) relationships over achievements	E2 E3	CA1 E1 E1 E1 E2	CA3 E2 E3 CA2 E3		
(I) like(s) to receive feedback	CA1	E1 E1 E2 E3 CA2 E3	CA3 E3	E2 E1 E2	
(I) want(s) to be in control		CA1 E1 CA3 E1 E3 CA2 E1 E2 E3	E2	E2 E3	
(I) can interact well with people holding different viewpoints		CA1 E1 E3 CA3 E1 E2 E3 CA2 E1 E2 E3	E2		
(I) handle(s) conflicts well	E1 E2	CA1 E1 E3 CA2 CA3 E1	E2 E2 E3 E3		
(I) handle(s) uncertainties well	E3	CA1 E1 E3 CA3 E2 CA2	E2 E1 E1 E2 E3		

Behavior / activities	Strongly agree	Agree	Neither agree/ or disagree	Disagree	Strongly disagree
He/ she often makes statements that are not in line with his / her behavior		E2		E2 E1 E1 E3	E1 E2 E3 E3
He / she is focused on expectations and approval of others		E1 E2 E1 E3 E1 E2 E3	E2 E3		
He /she approached item X from a specialized perspective		E1 E3	E2 E2 E3	E1 E2 E1 E3	
He / she focused on the development of knowledge around item X	E1 E2 E3	E2 E1 E1 E2		E3 E3	
He / she develops creative and original solutions		E2 E1 E3 E1 E3 E3	E2	E1 E2	
He / she takes measures that are focused on the short term		E1 E1 E2 E3 E3	E1 E2 E2		E3
He / she actively pursues transformation of the organization via his / her actions with respect to item X		E1 E2 E3 E2 E1 E1 E2 E3	E3		
He / she is focused on actions and targets		E1 E2 E3 E2 E1 E3 E3		E1 E2	
He / she is capable of creating shared visions among people with different worldviews		E2 E1 E3 E3	E1 E2 E3 E1	E2	

He / she handles the resistance of colleagues well	E3	E1 E2 E3 E1 E1 E2	E3	E2	
He / she is focused on improving performance	E1 E2	E1 E3 E1 E3	E2 E2 E3		
He / she is only involved in item X because it influences him / her personally		E1	E2	E2 E1 E3 E3	E1 E2 E3
He / she creates new rules if existing ones are considered irrelevant	E3	E1 E2 E2 E1 E3	E2 E3	E1	
He / she is the type that holds up a mirror / confronts you with your own way of thinking	E3	E1 E2 E2 E1 E1	E3 E3		E2

Appendix F. Interview quote list

Nr.	Subject	Element (code)	Quote
1	Self-reflection	Self-awareness (E1)	(..)..maybe I have become more activistic so to say..that sounds immediately very heavy, but like: there is more combativeness, more externally.”
2			“I did not say like ‘no, I am not going to do it’..I could have said that, but I did not. (..)..at that time I never really thought about it actually..yes, if you look back now, it is easier to reflect on it..actually it is kind of funny, I could have done it. That is actually the most clear signal that you can give as a project leader like ‘hé, I do not agree with this, so if you still want to continue, well then look for someone else.’ ”
3			“All these groups we have, - yes the staff members we did involve a lot, but the people that had to work with it eventually, they had little...that is funny actually..with hindsight they had little influence, so we also did not sit down with them like ‘What do you actually really want?’ If i had to do it again, i would not do it like that anymore i think. Then i would talk a little bit more with these groups like ‘hé, what do you want actually?’ ”
4			“ (..)...I was always very much thinking like ‘ oh we have a problem, oh, let’ s solve it’ , you know, dive fast into the solution and what you learn from lean is, crazy enough maybe, to sit back and look with each other like ‘ what is the problem really? Where is it? Who is bothered by it? What are the causes?’ ”
5			“For that, another mindset had to..yes that had to develop in the beginning..you have to push different buttons in the beginning. (..) I did not think it was easy in the beginning, but I also did not resist it, I wanted to do it.”
6			“You all automatically have skills that are more natural to you and a number of skills that you may need but that are somewhat less developed and which you have to take forward. We all have that. And you keep that.”
7		Capacity to reconcile inner conflicts (E3)	“So on the one hand I can put it aside me relatively easily, even though you are busy quite a while to see if it will work out after all..but if, at one point, you notice that it is not really or really not...yes..,I was able to more or less put this aside me.”
8		Awareness of inner conflicts (E2)	“(..).. it is a little bit of a head-heart discussion that you have then actually.”
9	Managing complexity	Systems thinking	“At home you just do that with your children, you say ‘don’t waste water’, you try to teach your children the meaning of the word sustainability. If then they start using the word, you get happy so to say. That is in your own ‘circle’, but if

		(F3)	you become internal sustainability coordinator, you have to take it more outside..and yes..then you see more that there are bigger initiatives so to say.”
10			“You can make it really big, but you can also keep it small [sustainability]. I think in any case that if you make it really big, we first have to make sure we continue to be able to populate the world well, that we can live on it well. That I can leave the planet to my children, if I am not there anymore at one point. Small, then I think here, at RIVM (...) and for me it is even smaller, it is actually a kind of way of life.”
11			“Yes, it opened a whole new perspective for me, actually a lot is happening already.”
12			“I am a bargeman’s daughter and I always had to be economical with water, that is already drilled in so to say. That you sail outside, you enjoy nature and you like to keep it that way, for example.”
13			“I am not so busy with other things for no reason, it is more because I want to contribute to society, because I can and because I want to and because I also used to receive things from society in the past and know I want to do something back.”
14			“You see that the most important shift is from more internal to also external, that you try to get others involved.”
15			“..sustainable handling of people, that people can work in such an efficient way that they are also not too much bother by work pressure and can be proactive in a pleasant way. If they are less bothered by work stress, they are less bothered by absenteeism. That is also sustainable, with regards to the community, to society.”
16		Long-term thinking (F1)	“I think it is really important that I as employee..that more employees think that I have fun in my job, that also when I am retired, which will takes several years longer, I still will have a nice life.”
17			“(..)..then, very quickly it became clear like ‘hé, soon they have a lot less work’..that is quite interesting, like ‘hé, what is happening, people have less work, what are they going to do?’ ”
18		Capacity to challenge / reframe (F2)	(..)..pretty quickly the awareness arose like ‘we can use our time in meetings also more effectively’ and then I also thought ‘yes’, I agreed with that completely, I still do. We can win so much time, there are so much meetings being held in such an inefficient way” (..)”
19			“At RIVM there is seldom being worked with a business case, like ‘hé, how smart is this really, what we are doing?’ and ‘do we ever earn back the investment that we made?’ That I think is a pity. I think it is good to at least think about it, like ‘he, we are investing money in this, - it does not even matter if it is a lot or a little, - but there is very little thought put into ‘how smart is that really’. I myself think it is important, I sometimes do projects

			where I say 'hé, why don't you first look at the business case, should I help you with that?'
20			"(..)Maybe we should link these subjects more together" [Lean and Sustainability within RIVM.]
21		Capacity to tolerate uncertainty (F4)	"Rivm'ers like something strictly defined, structure clarity, like here I am being asked for and that is what I need to do, but for me that is not really necessary. For the development trajectory I was also asked, yes, so what do I have to do? A little bit of this, a little bit of that. Yes, where are we going then? Yes, eh, I don't know. That was all very unclear and I thought, well I am going to jump in it anyway and then we will see where we end up. I also did that basically as sustainability coordinator."
22			"Look, how bad it was exactly in the past, we will never know, those data are not there, but we all experience it like 'ok, there is a problem and we are bothered by it. We cannot measure it but there is a problem.,. we accept that.'"
23	Broadening focus	Capacity to understand people holding conflicting viewpoints (G2)	"So on the one hand I understand it, from a bureaucratic point of view and from a security point of view. You are of course not allowed to leak information. But on the other hand I think, it is also a little bit exaggerated and just grant these devices and stuff a second or third life."
24		Capacity to interact with people holding conflicting viewpoints (G3)	"Yes then.. (..)then you have little..if your principal still wants to continue, yes ok, then that is the situation."
25			"And there have been a few people that remained with that [resistance] and then we said 'ok, then you have the option, then you just don't participate in this pilot right now, return the tablet. Just return to the old way of working, fine, also ok."
26			"Then we just said 'well ok, then you go back and you are removed from the pilot group', we also informed the manager..well, yes, fine, suit yourself. Yes, if it does not fit, it does not fit."
27			"Sometimes they say yes, sometimes they say no, this just has to happen. Well, ok, also fine, then that is clear, but at least we have discussed it and that I find important."
28			"I returned the risk back to the board of directors, so I said 'Ok, you want to do this now, there are quite clear risks involved.. (..) We point them out, we cannot do anything more about it right now. You want to do this, you are now taking this risk, do you agree with that? They then accepted that."
29		Openness to feedback	"I think that if we reach that at RIVM, that we think it is normal that we look at each other's work with an open mind, without judgement and if we want to

		or suggestions of others (G5)	have that attitude with each other like ' we want to improve with each other', if you have that, then...then you can become such an excellent organization where processes are 10 times better than in a general organization. Then you can become such an excellent organization, one you read about sometimes."
30			"Sometimes, because you have experience with looking at your job from a distance..you can sometimes have the tendency to introduce certain solutions to the group like 'Gee, maybe this is an idea?' and then you wait if it gets across, yes or no. Sometimes, it doesn't and then you think 'darn'."
31			(..)..it was also partly behavior that I partly caused myself and then it is good that someone holds a mirror up to you like 'yes but because you do that'.. (..)
32			(..) in the beginning I was told 'you are going too fast, you are ahead of the game and if you are going too fast, the distance will become too large and you will lose us. Because you want to go too fast.' And I was like 'Yes, but I am pulling, come one, I am pulling'."
33		Awareness of conflicting viewpoints (G1)	"(..)..how do you get a team in action..that is also interesting..you can fill course days with that. That I think is interesting, how do you do that. How do you get people to follow you, why do you do things that only create resistance making that people do not want to follow you at all? That has to do with completely different characters, different characteristics. That is interesting."
34			"It is true that everyone experiences it in his own way of course, from your own vision, from your own opinion. One brings the blue processes, the other is more a philosopher you know, that division of roles you also see with us, one may be more practical, more down to earth, the other more philosophical. So in that sense we all complement each other."
35		Capacity to handle / resolve conflicts (G6)	"Yes, then you do notice like, hé, something is going on and I am the kind of person that does not avoid conflicts so to say. I am not really a searcher but... (..) Yes, then I will deal with it [when there is a conflict]."
36			"Well, you know, the art is then to..that person is allowed to say that, but it belongs to that person, it is not mine or from the group, it is from that person and you have to leave it with that person, you know, and give this person space to say what he or she has to say."
37			"Yeah..there is not that much friction and if it is there, then things are being said, but because we collaborate quite closely, we are also quite safe, familiar with each other so to say, that we dare to express ourselves and also dare to admit like 'yes, ok, this is how I am, therefore I react like this' or 'you say that and that affects me in this way' and then the other person says 'Yes, but that was not at all my intention', 'yes, but this is how it feels to me'."
38			"People often have to, so to say, get out of the resistance, or first get out of the fear before they can start to build. It is a change curve, with changes, people actually go a little bit through a change curve. At first there is denial, subsequently they get angry, then they become frustrated or..and then they

		can start to climb again. You first have to pull them through the curve before you can move on with them.”
39	View on sustainability (G7)	“I think sustainability is a very important subject”
40		“Don’t waste, so to say. (..) ..green economy also and in fact, the social aspect also belongs there. Actually, for me it is a whole. (..) Waste actually has to do with everything. You are not allowed to waste the earth, you are not allowed to waste food...if you can help other people, then you should do that.”
41		“Well, I myself do consider the sustainability aspect as very important.. it is just a waste how is being printed here, well at least at that time.”
42 (B2)		“Yes, well in any case I think paper..and especially for RIVM it holds that, we are the institute for public health and environment, so..even if it is just for the image, internally but certainly also to go out and that you then have all these piles of paper, no that is not appropriate for this time anymore.”
43		“How is it possible that we, as an institute that also stands for the environment, that we actually do not value sustainability that much. (..) I do think sustainability is important. (..) That is why I liked working on this, yes, I think it is important and this is also just a chance to considerably reduce paper use.”
44		“Sustainability means employing means, scarce means as efficiently as possible. If you can do something with less material, if you can do something with less waste, minimizing waste, that is really resembling being sustainable. That you look consciously at processes, eliminate material waste but also the use of everything..buildings, gas water light, everything that you put in your test tubes, also of course people..sustainable handling of people, that people can work in such an efficient way that they are also not too much bothered by work pressure and can be proactive in a pleasant way. If they are less bothered by workstress, they are less bothered by absenteeism. That is also sustainable, with regards to the community, to society.”

Nr.	Subject	Quote
45	Personal commitment (C5)	“That Marjan Minnesma arrives at the symposium and you keep following her a little..that has a special meaning..and that climate case also really moved me so to say.”
46		“I was happy to see that the RIVM Dia issue is about sustainability and that it can stay alive that way.”
47		(..)..then I had a conversation about something else..also a little bit about sustainability, but more about local participation so to say, there I also asked ‘how is it actually going with sustainability?’

48		“and what attracted me in that, when I could join the second training group, the second wave, I could also become greenbelt, what attracted me in that..it was not as much about systems, not about software, but a lot about other things..it was about people, about attitudes, about behaviors, about culture, you very much change the human aspect, the soft side, soft skills..”
49		“What motivates me is if I see people flourish, or if I see people grow in their role, I see people do things that they did not think of before and after which they say ‘Gee, I am doing better or I am doing fine now, it is going well.’ ”
50	Collaboration (A6)	“Especially working with other people that were also enthusiastic about sustainability..(..)..But especially working together with others, then you feel that something is flowing so to say.”
51		“Luckily there are also others that did a lot in this and then you hope together that you can arrive at a bigger impact. You need the different people at the different components to go further.”
52		“(..).. so we get an assignment and then you are going to..I also really want to do that in a team. So we are also going to do this together, with an emphasis on together.”
53		“(..).. to group people and subsequently move them so they work towards results and to facilitate, guide that process..sometimes a little bit of pushing, sometimes a little bit massaging..I really like that.”
54		“(..)..then you are just on the floor, with the employees, having a nice brainstorm session together or whatever, or giving a course, training people.”
55	Involved in multiple organizations (B7)	“I am not so busy with other things for no reason, it is more because I want to contribute to society, because I can and because I want to and because I also used to receive things from society in the past and know I want to do something back.”
56	Empathy (A4 and A7)	“That I find very sad for such a person and that is something I cannot so easily put aside so to say..”
57		“The resistance, or the tension, the dynamics often arrive at the moment that is being decided like ‘ok, now we are going to do these and these things differently’, at the moment people really have to start changing. That is a also a very natural response he, resistance and if it is then réally happening, yes, then sometimes it can get exciting, emotions can run high. Yes..then sometimes you can experience all kinds of things..people can react strongly in resistance. That is expressed sometimes by crying, getting angry, getting up and walking away..sometimes that gives..yes, it apparently evokes something.”
58	Focus on actions / targets (C4)	“Well I am a project leader because I want to achieve something, that just very simple.”
59		“Well for projects, at least there should be a goal, where do we work towards,

		that is something I myself think is important.”
60		(..) very much focused on results, very much wanting to show results, targets..”

Appendix G. Integration items

Integration item			Type	Sustainability dimension			Organizational level									Organizational culture level						Time							
Tier 1	Tier 2	Tier 3					Strategic			Tactical			Operational			Strategic		Tactical		Operational		Past	Present	Future	Score				
				Pe op le	Pl an et	Pros per ity	Pl an o	Ch ec k	A c t	Pl an o	Ch ec k	A c t	Pl an o	Ch ec k	A c t	Art ef act	Val ue	Basic Assump tions	Art ef act	Val ue	Basic Assump tions	Art ef act	Val ue	Basic Assump tions					
Multiple waste bins			Result		1		1	1		1	1	1	1	1	1	1	1		1	1		1	1		1	1	1	87%	
Traveling sustainable is important	Traveling sustainable is important: Traveling by bike		Activity		1		1	1	1	1	1				1			1	1	1	1	1	1	0,5	1	1	1	85%	
Sustainability Policy			Result	0,5	1	0,5	0,5	0,5	0,5	1	1	1	1	1	1				1	1		1	1	0,5		1	1	80%	
Bedrijfsmilieuplan			Activity		1		1	1	1	1	1	1	1	1	1	1	1		1			1			1	1		78%	
RIVM2020 Strategy	RIVM2020: Anderswerken program	Working paperless	Activity		1	0,5	1	1	1	1	1	1	1	1		1	1		1	1		0,5	0,5		1	1	1	76%	
RIVM2020 Strategy	RIVM2020: Anderswerken program	Time and Place independent work	Activity	1			1	1		1	1			1	1							1	1		1	1	1	61%	
RIVM2020 Strategy	RIVM2020: Working according to LEAN principles		Activity		0,5	0,5	1	1	1	1	1			0,5	0,5							0,5	0,5			1	1	1	57%
Environmental reporting			Activity		1		1	1					1	1	1	1	1					1	1		1	1	1	57%	
RIVM2020 Strategy	RIVM2020 Academy	Education system	Activity	1			1	1		1	1		1	1		1			1			1			1	1	1	57%	
Employee satisfaction research			Activity				1	1	1	1					1	1			1			1			1	1	1	48%	
RIVM2020 Strategy	RIVM2020: A3-method	Bilateral Progress reports	Activity							1	1	1	1	1					1	1		1	1			1	1	48%	

