

Behavioural competencies of Sustainability Leaders:

An empirical investigation

Purpose: Our world faces greater environmental, social and governance challenges than ever before and a growing number of organisations are establishing sustainability functions, strategies and plans in an effort to address these complex issues. However, limited research exists on the critical behavioural competencies required to maximise leadership impact on sustainability initiatives. With the stakes so high and the task so complex, this empirical study identifies key behavioural competencies of corporate sustainability leaders and sets out a model for assessing these behavioural competencies.

Design: Based on a review of the empirical literature, the study sets out five competency groupings, which informed a hypothesis. This was tested quantitatively via a self-report tool that enabled a quantitative analysis of behavioural competencies. Contributions from 97 participants were triangulated with data collected from colleagues who rated the participants on the same set of competencies.

Findings: Ten critical and ten prominent behaviours of Sustainability Leaders in five competency groupings were identified. The analysis also explored how the business sector, location, years of experience and level of qualification impacted upon the sample Sustainability Leaders' perceived effectiveness.

Research limitation/implications: The sample size means that the competency model derived from the findings should be seen as propositional and requiring further validation. Impact measures would add considerable robustness to the findings.

Practical implications: The research offers a means to better focus and tailor leadership development experiences and as a tool for the recruitment of Sustainability Leaders.

Originality/value: The study is based on a robust quantitative approach, and the behavioural competency model developed as a result provides a tool for Sustainability Leaders to map current behaviours and monitor their progress over time.

Keywords: Corporate social responsibility; sustainability; leadership; behavioural competency; leadership development

Paper type: Research paper

BITC – Business in the Community

CPSL – Cambridge Programme for Sustainability Leadership

List of abbreviations
CSR – Corporate Social Responsibility

GACSO – Global Association of Corporate Sustainability Officers

Our world faces greater environmental, social and governance challenges than ever before – including declining global ecosystems, population growth, forced migration and unprecedented macro-economic stress. Today, a growing number of corporate organisations in every sector around the world are establishing sustainability functions, strategies and plans in an effort to address these complex issues (Doppelt, 2010; Makeover, Mattison, Salo, & Kelley, 2015). Although the concept of eco-leadership and environmental leadership in corporate organisations dates back to the mid 1990s (Schmidheiny 1992, Shrivastava 1994), others argue that senior corporate sustainability roles did not emerge until the mid 2000s (Makeover et al., 2015). When Walmart and General Electric launched their sustainability strategies in 2005, there were only a handful of executives whose main function related to sustainability or the environment. In their annual survey of the corporate sustainability profession, Greenbiz (Makeover et al., 2015.) show that whilst the number of executive positions peaked in 2008, and that sustainability budgets have grown only marginally since then, headcount under these corporate executives has continued to grow in 4 in 10 large companies. There is also strong evidence that the number of sustainability and environmental roles in general is growing in Europe and the UK (Department for Business Innovation and Skills, 2015; Eurostat, 2016) with employment in this sector rising from 2.8 million full time equivalents (FTEs) in 2000 to 4.2 million FTEs in 2013. This growth has led to the emergence of a new function in the middle tier of organisations: the ‘Sustainability Leader’. Individuals adopting this role work on a daily basis to launch new sustainability initiatives; ranging from marketing campaigns aimed at influencing consumer behaviours to multi-stakeholder partnerships that work to create shared value in the marketplace (Porter, 2011).

In a Special Issue of this journal in 2012, Carla Millar and colleagues made the case that sustainability practices in organisations were largely unexplored and merited further investigation. They argued (Millar et al., 2012) that sustainable business development requires values based and visionary leaders who use expert sense-making within and beyond the boundaries of their organisations; and that leaders “also need to ensure that all steps that are required for this vision to become reality are taken” (p.491). There are, however, very few quantitative studies of the behavioural competencies of this growing breed of corporate leaders. This paper sets out the theoretical context, methodology, findings and further analysis of research undertaken by AUTHOR 1 for her Master’s dissertation at the Cambridge Programme for Sustainability Leadership that was based on Saville Consulting’s Wave® Professional Styles questionnaire. It goes on to identify ten critical and ten prominent behaviours of Sustainability Leaders and aims to deepen understanding of the key competencies of Sustainability Leaders in order to provide the basis for more effective training and recruitment of individuals into this growing corporate role.

For the purposes of this study, the role of Sustainability Leader is defined as an individual who works to align a company's decision-making about the allocation of capital, product development, brand and sourcing with the principles of sustainable development (Global Association of Corporate Sustainability Officers, 2013; World Commission on Environment and Development, 1987). Whether working full-time or assuming a Sustainability Leadership role alongside other responsibilities, the expectations of leaders in this profession are constantly evolving. The changing nature of this role was highlighted by Acre (2011a) as *"the evolution from the widely accepted term 'corporate social responsibility', to 'corporate responsibility', to the currently recognised 'sustainability'"*. Whilst nuances in language may be understood within academia and professional networks, Sustainability Leaders (and to an extent their stakeholders) are required to adapt to an ever changing series of expectations and best practice. For example, Makeover et al. (2015) report that sustainability professionals are spending increasing amounts of time reporting on environmental indicators and argue there is a risk that the role may become less strategic, more reactive and compliance based, thus reducing its relevance and importance to corporate strategy.

A review of the literature, summarised below showed that limited research exists on the critical behavioural competencies required to maximise leadership impact in sustainability (Luenberger and Goleman, 2010). The review provided the basis of five competency groupings reflected in the literature that were tested empirically via the Wave® Professional Styles questionnaire. Models of behavioural competence frequently form the basis of personality questionnaires that are common tools in corporate leadership development, performance management and recruitment. In this context, 'behavioural competencies' refers to the traits that are required to be successful in an organisation (e.g. an individual's motives and talents) outside a specific management or technical skillset (Wilson et al., 2006).

Although sustainability leadership roles, motivations, values and action logics have been explored in the literature (Anderson & Bateman, 2000; Bansal, 2003; Egri & Herman, 2000; Boiral, 2009; Brown 2012) the behavioural competencies of Sustainability Leaders have not been addressed empirically. There is a consistent call for values-based and transformational leadership to drive the sustainability agenda (Kakabadse et al., 2009; Luenberger & Goleman, 2010; Visser, 2011), however, no quantitative research has been undertaken to identify what the behaviours of such leadership look like in practice. This study aims to fill that gap, and in doing so provide a model to determine the critical behavioural competencies of Sustainability Leaders.

Behavioural competency models are increasingly being used by organisations to evaluate leadership potential and assess the differences between individuals (Wilson et al., 2006). Many organisations have competency models for their leaders that are focused on traditional concepts of leadership (i.e. management characteristics and technical aptitude). They also rely on workplace performance evaluations as a means of identifying high potential employees (Viswesvaran et al., 1996). Literature has consistently and directly related leadership effectiveness to measures including: performance of subordinates, job satisfaction, positive mood, effective commitment to the organisation, employee attrition, pursuit and attainment of challenging goals, perseverance and resilience (Bass and Riggio, 2006; Heifetz et al., 2009; Torbert et al., 2004). By comparison, there is only a small number of publications in recent years that identify the behavioural competencies of Sustainability Leaders.

There are numerous definitions of sustainability cited in the literature (Lindgreen et al., 2011, Maon et al., 2008; Wilson and Holt, 2003); and the wide field of leadership is replete with dozens (if not hundreds) of over-lapping definitions of leadership (Northouse, 2010; Yukl, 2009). In their comprehensive review of literature on leadership theory published since the turn of the century in ten top tier academic journals, Dinh et al. (2014) identify 66 discrete theory domains discussed in more than 750 papers. As Wiek (2010) argues and Figure 1 shows, this confusion of definitions and overlapping concepts is replicated when the search for empirical literature on leadership competencies is constrained by a focus on 'sustainability'. A range of complementary and overlapping concepts are found that range across the literature on corporate social responsibility leadership (D'Amato et al., 2009; Godos-Diez et al., 2011; Kakadbadse et al., 2009; Swanson, 2008; Van Velsor, 2009); corporate responsibility leadership (Morton and Grayson, 2009; Wilson et al., 2006) and sustainability leadership (Berns et al., 2009; CPSL, 2011; Ferdig, 2007; Marshall et al., 2011; Parkin 2010; Quinn & Dalton, 2009). However, existing literature on competencies for sustainability, remain somewhat ambiguous (Wiek, 2010).

Our review of sustainability leadership literature uncovered twenty-five theories, with input from over seventy academics from around the world (see Figure 1). Some of these have developed from existing leadership theories, whilst others appear to be more emergent. For example, the field of conservation science leadership (Manolis, et al., 2009) is based upon the existing principles of adaptive leadership, whilst new sustainability leadership frameworks have also been developed through grounded theory, such as eco-centric leadership (Hanson & Middleton, 2000) and synchronicity leadership (Jaworski & Senge, 2011). A number even claim that sustainability can *only* be delivered through a completely new leadership paradigm (Fry and Slocum, 2008; Porter 2011; Scharmer and Kaufer, 2013).

Figure 1: Sustainability Leadership Theory

Theory	Associated Academics
Adaptive Leadership	Burke, 2007; Heifetz et al., 2009
Change Leadership	Doppelt, 2010; Kotter, 1995; Luenberger & Goleman, 2010; Scharmer & Kauffer , 2013; Visser & Crane, 2010; Wagner & Kegan, 2006; Wilson & Holton, 2003
Conservation Science Leadership	Manolis et al., 2009
Corporate Citizenship Leadership	Boston College, 2010
Corporate Responsibility Leadership	Morton & Grayson, 2009; Wilson et al., 2006
Corporate Social Responsibility Leadership	D'Amato et al., 2009; Godos-Diez et al., 2011; Kakabadse et al., 2009; Lindgreen et al., 2011; Swanson, 2008; Van Velsor, 2009; Wilson & Holton, 2003
Eco / Eco-centric Leadership	Hanson & Middleton, 2000; Shrivastava, 1994
Environmental Leadership	Berry & Gordon, 1993; Boiralet et al., 2009; Egri & Herman, 2000; Fernandez et al., 2006; Portugal & Yukl, 1994; Redekop, 2010
Ethical / Moral Leadership	Banerjee, 2010; Ciulla, 1998; Lennick & Kiel, 2008; Trevino et al., 2000
Globally Responsible Leadership	European Foundation for Management Development & Global Compact, 2005; Hames, 2007, 2009;
Green Entrepreneurship / Eco-preneurship	Linnanen, 2002; Pastakia, 1998; Walley & Taylor, 2002
Living Leadership	Binney et al., 2009
Purpose-Inspired Leadership	Visser, 2011
Responsible Leadership	Doh & Stumpf, 2005; Maak, 2007; Maak & Pless, 2006; Morton & Grayson, 2009; Wilson et al., 2006
Servant Leadership	Covey, 2006; Greenleaf & Spears, 2002
Social Entrepreneurship	Elkington & Hartigan, 2008; Ellis, 2010; Nicholls, 2006
Social Intrapreneurship	Ellis, 2010; Grayson et al., 2011; Sustainability, 2008
Spiritual Leadership	Fry & Slocum, 2008
Sustainability Leadership	Acre, 2011b; Berns et al., 2009; Cambridge Programme for Sustainability Leadership (CPSL), 2011; Ferdig, 2007; Marshall et al., 2011; Parkin, 2010; Quinn & Baltes, 2007; Quinn & Dalton, 2009
Sustainable Business Leadership	Hind et al., 2009
Sustainable Development Leadership	World Business Council for Sustainable Development (WBCSD), 2011
Synchronicity Leadership	Jaworski & Senge, 2011
Transformational Leadership	Bass & Riggio, 2006; Torbert & Cook-Greuter, 2004
Values-based Leadership	Hemingway & MacLagan, 2004; Muscat & Whitty, 2009; O'Toole, 1996

The literature reveals that the role of a Sustainability Leader covers many complex issues including; human rights, environmental protection, equal opportunities, fair competition, and the interdependencies that occur between organisations and society (D'Amato et al., 2009). In an attempt to create a simple workable definition, the role of a Sustainability Leader is defined here as someone who represents the discretionary actions of an organisation *"to integrate social, environmental, ethical human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders"* (European Commission, 2011). However, like Ferdig's definition (2007, p. 32): *"Sustainability leaders take conscious actions, individually and collectively, leading to outcomes that nurture, support and sustain healthy economic, environmental and social systems."*; we should be mindful that leadership of sustainability initiatives generally requires a shared purpose and the involvement of many influencers across an organisation (or community). For the purpose of this research, however, we focused squarely on those leaders who have formally recognised job roles related to corporate sustainability. This excludes those individuals who volunteer as 'sustainability champions' or leaders who embrace sustainability in an informal capacity (Visser and Crane, 2010).

It would appear undeniable that guiding an organisation toward sustainability is a complex and vast leadership challenge. Where sustainability leadership undoubtedly reflects traditional leadership theory is in the fundamental focus on change and influence (Grint, 2008; Yukl, 2009; Sotarauta, Horlings, & Liddle, 2012; Wheatley & Frieze, 2008; Kotter, 1995). Sustainability Leaders are often working with significant levels of uncertainty and the unknown. Therefore, change-oriented behaviours are essential to develop creative, constructive solutions to complex organisational and social problems (Doppelt, 2010; Jarowski and Senge, 2011; Luenberger and Goleman, 2010; Visser and Crane, 2010; Wagner and Kegan, 2006). For example, transformational leadership theory highlights the need for a connection with a deeper purpose (Bass and Riggio, 2006) that acts as a catalyst for individual and organisational capabilities that can accelerate the progress toward sustainability (Torbert et al., 2004): Adaptive leadership focuses on how to engage with complex problems where there is no known resolution, an issue endemic to sustainability (Burke, 2007; Heifertz et al., 2009): Ethical leadership (Banerjee, 2010; Ciulla, 1998) considers issues of fairness and morality which are inherent to founding conceptions of sustainable development (World Commission on Environment and Development, 1987): The literature on servant leadership (Covey, 2006; Greenleaf and Spears, 2002), when applied to sustainability, extends the concept of serving others beyond the organisation to all stakeholders, the environment and future generations.

Although the empirical research into the competencies of sustainability leadership is certainly incomplete (Wiek, 2010; D'Amato, et al., 2009; Fernández et al., 2006), there are a growing range of positions expressed in the literature. Some researchers contend that core leadership competencies are what ultimately matter, whilst others claim that supplemental competencies, beyond the fundamentals of

'effective' leadership are needed (Brown, 2012; Boiral et al., 2014, 2009; Quinn and Dalton, 2009). Still others argue that sustainability requires a completely unique set of leadership competencies and attributes (Schien, 2015; D'Amato, et al., 2009; Wilson & Holton, 2003). Although there is overlap amongst the various theories, their discrete foci also contributes to their considerable differences. Given this complexity, this study focuses on literature which establishes behavioural competencies pertinent to Sustainability Leaders, which Pojasek (2008) describes as an "*observable behavioural act that demonstrates a professional's knowledge, skill and ability*". Figure 2 provides a summary of previous empirical studies (with access to source data providing over five hundred competency references) that identify behaviours of Sustainability Leaders.

Figure 2: Prior empirical studies of the behavioural competencies of sustainability leaders

	Berns, et al., 2009	Egri & Herman, 2000	Hames, 2007, 2009	Hind, et al., 2009	Kakabadse, et al., 2009	Luenburger & Goleman, 2010	Morton & Grayson, 2009	Quinn & Baltes, 2007	SustainAbility, 2008	WBCSD, 2011	Wilson & Holton, 2003	Wilson, et al., 2006
Sample >	50 Interviews, 15,000 Surveyed	73 Interviews	362 Interviews	108 Surveyed	300 Interviews	25,000 Interviews	30 Interviews	247 Surveyed	20 Interviews	200 Contributors	68 Interviews	24 Interviews, 100 Surveyed
Results Driven: action-biased with a passion for learning, an ability to 'make things happen' and confident in their decisions												
Articulating Information	X			X	X	X	X	X	X	X	X	X
Taking Action	X				X	X			X	X		
Developing Expertise	X		X			X				X	X	
Making Decisions				X	X						X	
Visionary Thinker: inter-disciplinary understanding, strategic in their outlook with an ability to envisage the future and persevere through difficulties												
Developing Strategies	X		X	X		X	X	X		X	X	X
Pursuing Goals		X			X	X			X	X		X
Providing Insights	X				X	X			X		X	X
Exploring Possibilities		X	X		X	X				X		
Ethically Orientated: determined to act with integrity, has an ethical approach and builds trust-based relationships												
Upholding Standards				X		X			X	X	X	X
Interacting with People			X			X	X				X	X
Empowering Individuals							X			X	X	X
Conveying Confidence		X					X					
Change Agent: willing to challenge established views, seize opportunities and embrace change with optimism												
Convincing People	X	X			X	X	X	X	X	X	X	
Embracing Change				X		X	X		X		X	X
Seizing Opportunities	X					X		X			X	X
Generating Ideas	X						X		X		X	X
Challenging Ideas												X
Thinking Positively							X					
Inclusive Operator: understands the motivations of others, caring attitude and a collaborative approach that engenders trust in their leadership												
Understanding People	X			X		X		X		X	X	X
Team Working						X		X	X		X	X
Directing People		X				X					X	
Establishing Rapport		X					X				X	

3 Research Methods

Based on the thematic review of literature (Guest et al., 2011) this study defines and then refines a model for understanding the behavioural competencies of Sustainability Leaders. To achieve this 97 participants completed a Wave® Professional Styles questionnaire to either confirm or reject specific behavioural competencies identified in the literature. This evidence was triangulated with data collected from colleagues who also rated the participants' sustainability leadership behaviour via an equivalent questionnaire. The quantitative analysis that followed identified ten critical and ten prominent behaviours associated with sustainability leadership. A fuller description of the methodology can be found in AUTHOR DETAILS REMOVED.

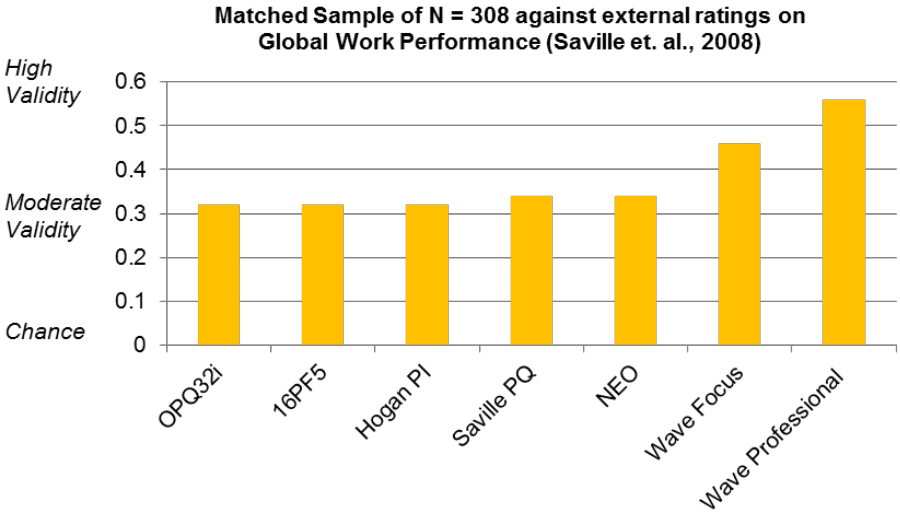
Purposive sampling, typically used in exploratory research, was used to access participants from difficult-to-identify, specialised populations (Bryman and Bell, 2013). Despite the challenges in identifying experienced corporate Sustainability Leaders, 209 leaders were selected as potential research participants. Each potential participant received an invitation letter that provided criteria to ensure the sample consisted of Sustainability Leaders with considerable experience and insight into embedding environmental, social and/or governance concerns in business operations. At this stage, forty-six individuals removed themselves from the potential sample by citing either insufficient experience to meet the criteria or a lack of time available to participate in the research. The remaining one hundred and sixty-three leaders in the sample population all confirmed that they currently or previously held upper management to senior level positions in their respective organisations. Furthermore, all participants confirmed both that they had dedicated at least fifty percent of their time to sustainability functions that had led, or contributed to the design of a major sustainability initiative over the previous three years. Of the remaining 163 Sustainability Leaders in the sample population, 97 successfully completed the Wave® questionnaire (an overall response rate of 59%). Each participant was asked to identify 'raters' from amongst their peers, who were then invited to complete a shortened version of the personality

questionnaire in an effort to validate participant responses. Most participants (64%) were rated by one or two people, with ten percent of participants rated by three people.

Participants worked in a variety of sectors; with 60% of participants from the United Kingdom, 12% from Europe, 17% from North America and 11% from the Rest of the World (including participants from Australia, India and South Africa). 74% of participants had more than ten years' experience (with 48% having 10-20 years and 26% having over 20 years). 68% of participants held post-graduate degrees, and a further 24% hold first degrees. There was a near even split of gender in the sample, with 51% male and 49% female participants.

The Saville Consulting Wave® Professional Styles questionnaire (“Wave®”) was used for this research as it provides peer-validated (“rater”) measures which enable quantitative analysis of the reported behavioural competencies. Although the validity of such measures is difficult to assess due to the complex relationship between context, behaviour and the underlying psychology of research participants (Cronbach and Meehl, 1955), the Wave® questionnaire provides strong comparative validity for measuring and predicting work performance (Saville et al., 2008; Messick, 1995).

Figure 3: Correlation matrix showing validity of personality questionnaires



Initially thirty-six behaviours captured by Wave® were reviewed to check the accuracy of the twenty-two behaviours used in the hypothesis. Subsequent analysis of each behavioural competency by sample demographics provided trends across participants and highlighted the range of differing responses. This analysis either confirmed or rejected the distinct competencies identified in the literature (i.e. a confirmatory research strategy). Through an iterative process of moving between the analysis and raw data, the critical behavioural competencies of Sustainability Leaders were identified, refined and verified.

Wave® rates the effectiveness of each competency on a 'standard to ten' ("sten") scale, where 1 is low and 10 is high. The mean average and range of scores can be calculated per behaviour to determine the 'effectiveness' of each competency grouping within the sample population. If the behavioural competencies identified in the hypothesis are key attributes of Sustainability Leaders, research participants demonstrating competencies in the upper quartile of the sten scale (i.e. 8,9,10) were deemed to be the most 'effective'. An illustration of this can be seen in Figure 5. Additionally, those behavioural competencies which consistently returned a higher sten score across the sample population were identified as 'critical'.

Figure 4: Hypothesis: Sustainability Leadership Behavioural Competency Model

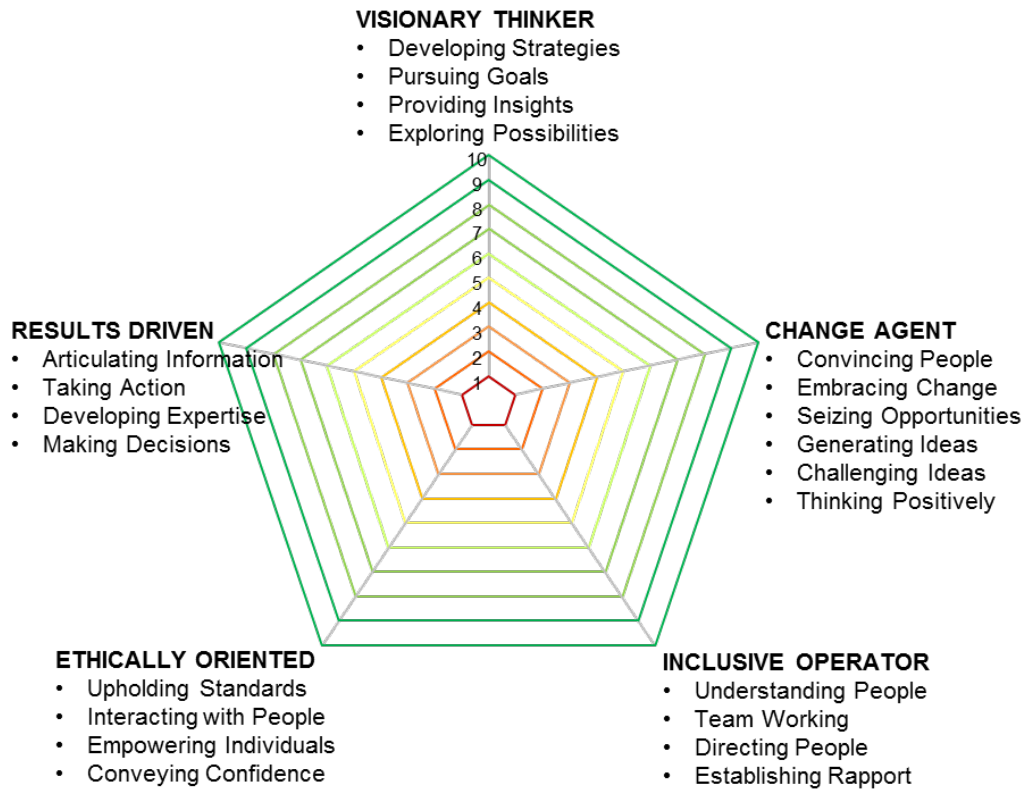


Figure 5: Identifying the most 'effective' Sustainability Leaders

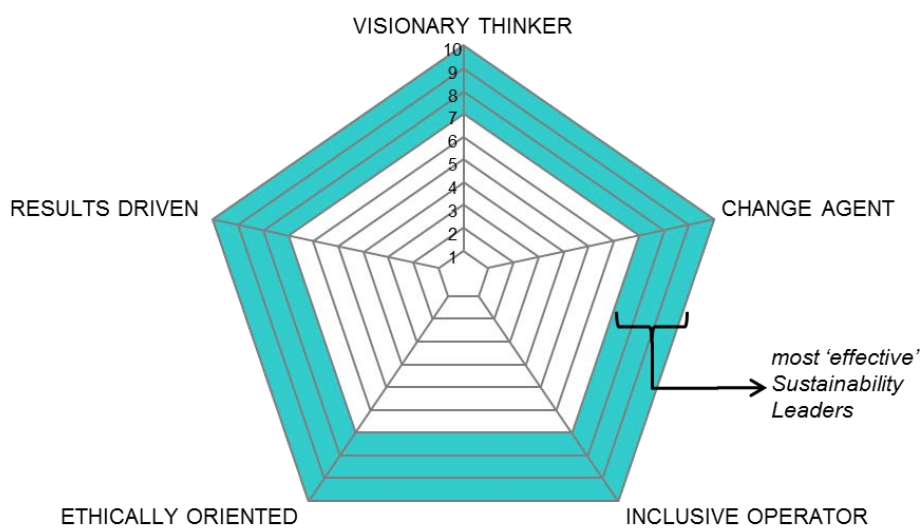


Figure 6: Research Approach

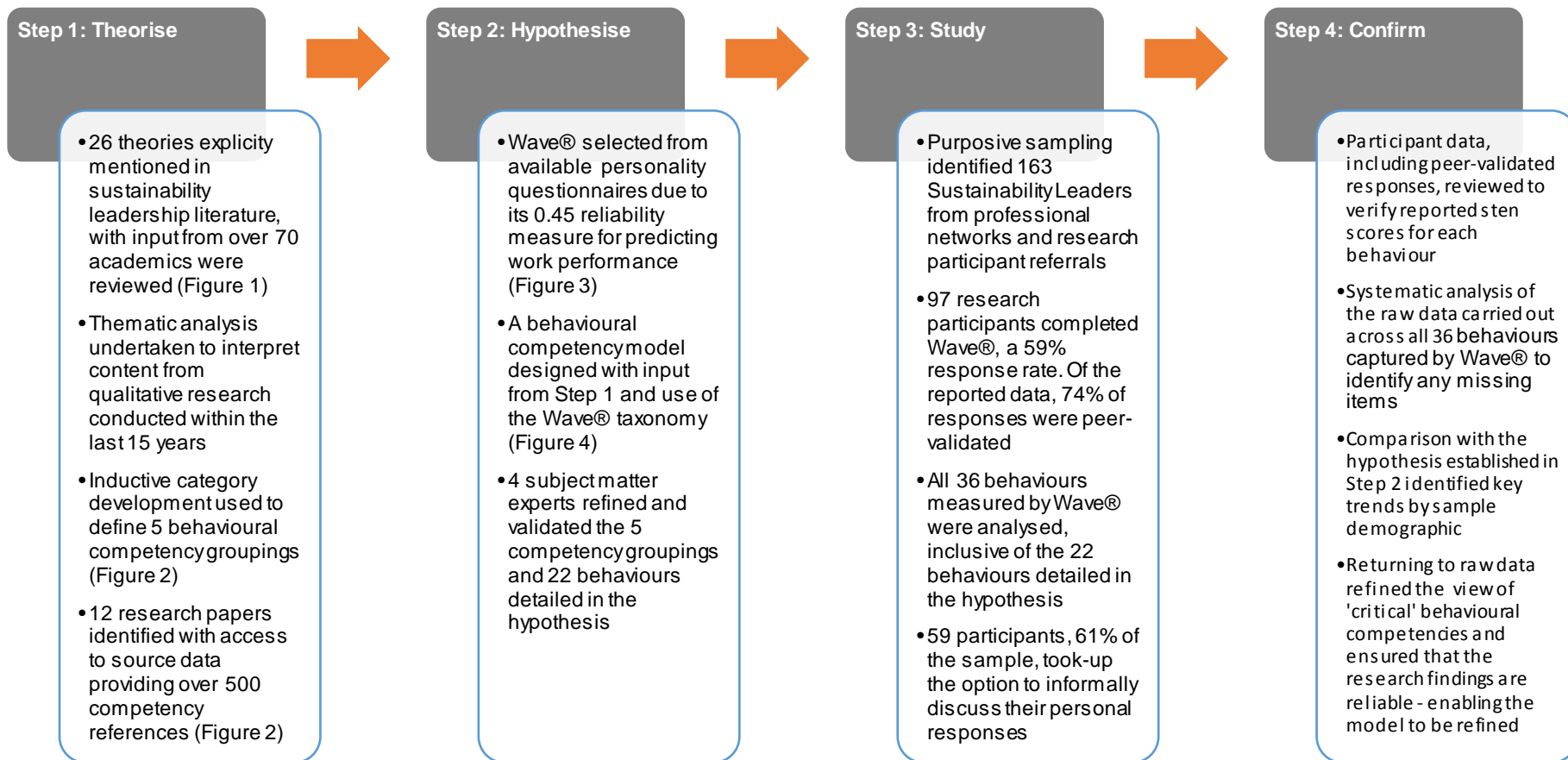


Table 1: Data overview for all 36 Wave® behaviours

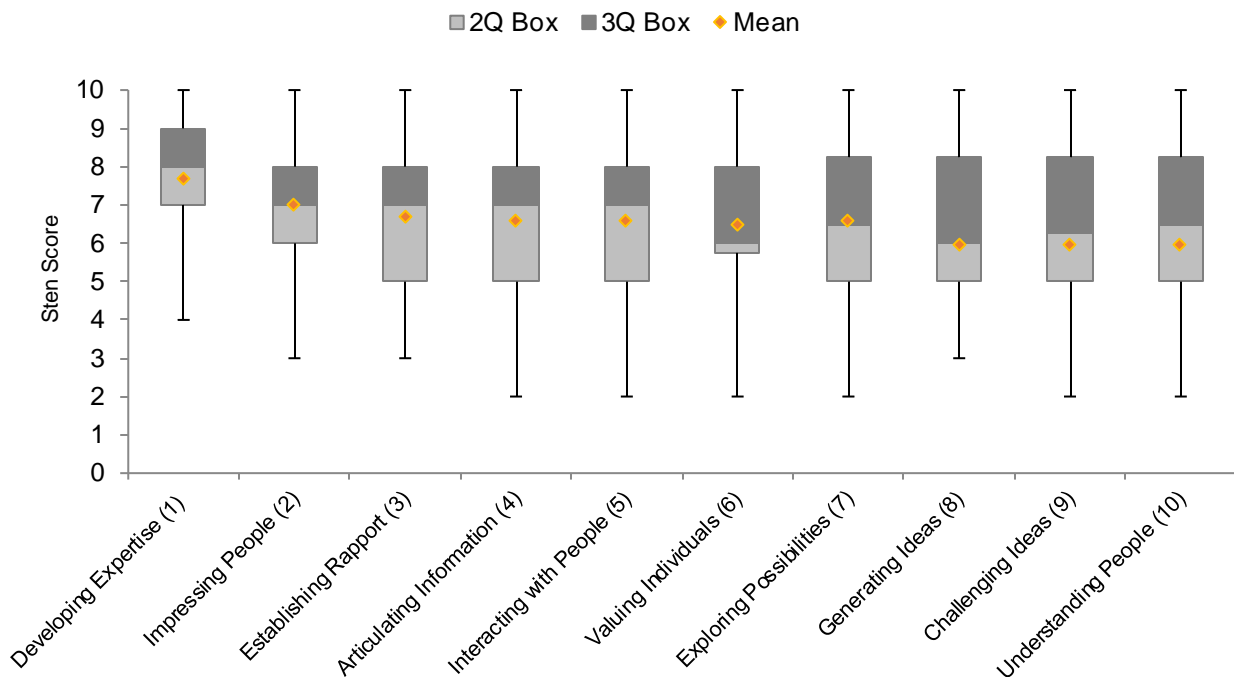
Wave® Cluster		Wave® Behaviour	Average (Mean)	Average (Median)	Min Value	Max Value	Values Range (Min – Max)	Outlier Values (H/L)
THOUGHT (SOLVING PROBLEMS)	RESILIENT (SHOWING RESILIENCE)	EXAMINING INFORMATION	5.1	5	1	10	9	-
		DOCUMENTING FACTS	6.2	6	1	10	9	-
		INTERPRETING DATA	5.2	5	2	10	8	H
	FLEXIBLE (ADJUSTING TO CHANGE)	DEVELOPING EXPERTISE	7.7	8	4	10	6	-
		ADOPTING PRACTICAL APPROACHES	5.3	5	1	10	9	-
		PROVIDING INSIGHTS	5.5	6	1	9	8	L
	SUPPORTIVE (GIVING SUPPORT)	GENERATING IDEAS	6	6	2	10	8	L
		EXPLORING POSSIBILITIES	6.6	6.5	2	10	8	L
		DEVELOPING STRATEGIES	5.9	6	1	9	8	L
INFLUENCE (INFLUENCING PEOPLE)	SOCIAL (BUILDING RELATIONSHIPS)	INTERACTING WITH PEOPLE	6.6	7	2	10	8	L
		ESTABLISHING RAPPORT	6.7	7	3	10	7	L
		IMPRESSING PEOPLE	7	7	3	10	7	L
	IMPACTFUL (COMMUNICATING INFORMATION)	CONVINCING PEOPLE	5.2	5	2	10	8	H
		ARTICULATING INFORMATION	6.6	7	2	10	8	L
		CHALLENGING IDEAS	6	6	1	10	9	L
	ASSERTIVE (PROVIDING LEADERSHIP)	MAKING DECISIONS	5.7	6	1	8	7	L
		DIRECTING PEOPLE	5	5	1	10	9	H
ADAPTABILITY (ADAPTING APPROACHES)		EMPOWERING INDIVIDUALS	5.6	5.5	1	8	7	L
		CONVEYING SELF-CONFIDENCE	5.8	6	1	10	9	L

	RESILIENT (SHOWING RESILIENCE)	SHOWING COMPOSURE	4.6	5	1	9	8	H
		RESOLVING CONFLICT	4.6	4	1	9	8	-
	FLEXIBLE (ADJUSTING TO CHANGE)	THINKING POSITIVELY	5.8	6	1	10	9	L
		EMBRACING CHANGE	5.1	5	1	8	7	-
		INVITING FEEDBACK	6.1	6	1	10	9	H
	SUPPORTIVE (GIVING SUPPORT)	UNDERSTANDING PEOPLE	6	6	3	10	6	-
		TEAM WORKING	5.9	7	1	9	8	L
		VALUING INDIVIDUALS	6.5	7	2	10	8	L
	DELIVERY (DELIVERING RESULTS)	CONSCIENTIOUS (PROCESSING DETAILS)	MEETING TIMESCALES	4.7	4	1	9	8
CHECKING THINGS			5.4	5	1	10	9	-
FOLLOWING PROCEDURES			5.7	5	1	10	9	-
STRUCTURED (STRUCTURING TASKS)		MANAGING TASKS	4.6	4	1	9	8	-
		UPHOLDING STANDARDS	5.8	6	1	10	9	L
		PRODUCING OUTPUT	4.7	5	1	9	8	-
DRIVEN (DRIVING SUCCESS)		TAKING ACTION	5.3	5	1	9	8	L
		SEIZING OPPORTUNITIES	5.7	6	3	9	6	-
		PURSUIING GOALS	5.6	6	2	8	6	-

4 Research Findings

Table 1 shows data points for all 36 behaviours captured by Wave®. These were examined and an aggregated view of sten scores across the sample produced. Behaviours were then ranked to show those which were most manifest and construct relevant in the sample. This helped to identify the most critical and prominent behaviours of Sustainability Leaders, based on mean and median sten scores per behaviour and taking outlier values into account. The strongest and therefore most critical behaviours in the aggregate sample profile are shown via box plot in Figure 7.

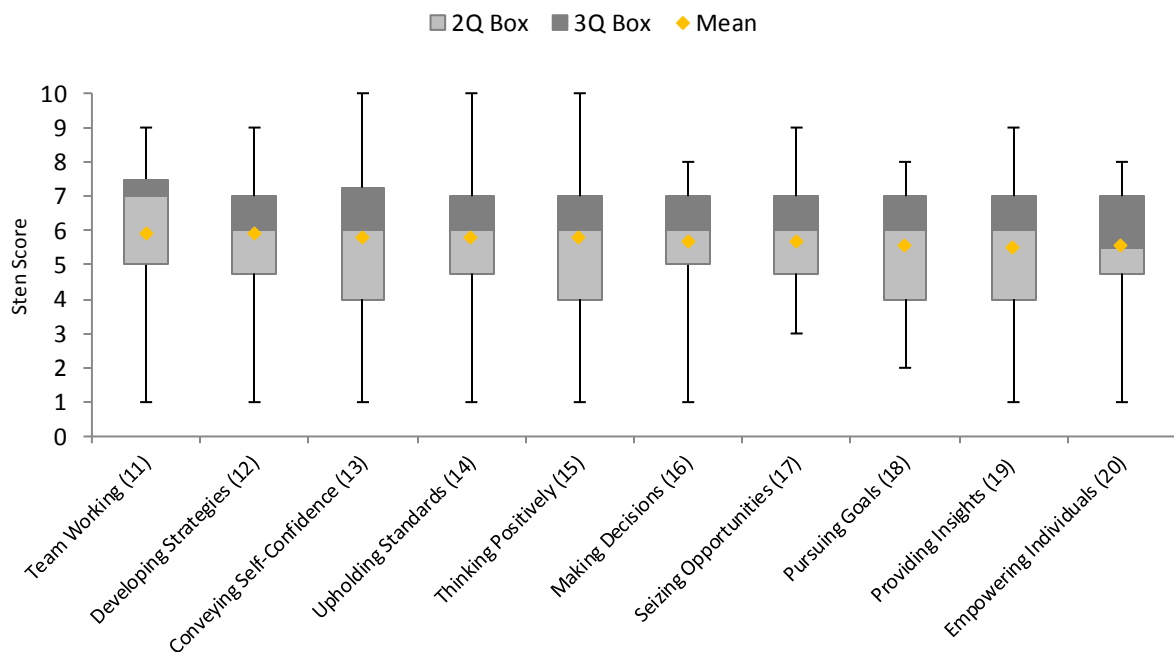
Figure 7: Wave® critical behavioural competencies



Where the third quartile (3Q Box) in the sten score distribution (also referred to as the 50th – 75th percentiles) demonstrated competencies of 8 or more, this validated the behaviour as one which was critical for effective Sustainability Leaders (Figure 5). The majority of these behaviours are found in past qualitative reviews (Figure 2). However, there were two newly identified behaviours: “Impressing People” and “Valuing Individuals”. These additional items both had a median result of 7, with low outlier values, indicating that they should be added to the Behavioural Competency Model (Figure 4).

Figure 8 shows additional behaviours that were prominent in the sample. The 3Q box for these behaviours demonstrated competencies in the range 5.5 to 7.5. Such behaviours are therefore understood to be meaningful for effective Sustainability Leaders, but not critical due to the lower distribution of sten scores and subsequent ranking relative to Figure 7.

Figure 8: Wave® prominent (but not critical) behavioural competencies



All prominent behaviours displayed are found in past qualitative reviews (Figure 2). However, there are four behaviours detailed in the literature which are not prominent within the sample. These are: “Convincing People”, “Directing People”, “Embracing Change” and “Taking Action”. Each item had a median result of 5, with either a wide range of responses or high outlier values. This suggested lower relevance and resulted in the behaviours being removed from the Behavioural Competency Model (Figure 4). A further twelve behaviours captured by Wave® had lower sten score responses which indicated their limited relevance for Sustainability Leaders and are, therefore, not detailed in these research findings.

By comparing the most critical and prominent behaviours with the five competency groupings identified in the literature (Figure 2), the research findings were used to update the ranking of the related behaviours. The third column of Figure 12 displays where behaviours have increased ([↑]), decreased ([↓]) or remained constant ([→]) in importance relative to the behaviours listed in Figure 2. Furthermore, it

shows where behaviours are added ([+]) or removed ([-]) in each competency grouping. By examining the ranking (#) displayed after each behaviour, it is also possible to determine the relative strength per competency grouping. The analysis suggests that behaviour associated with Sustainability Leaders who are Results Driven, Inclusive Operators and Change Agents are somewhat more important than those associated with Ethically Orientated and Visionary Thinker leaders. However, because all competency groupings exhibit a combination of both critical and prominent behaviours, each is deemed relevant in establishing the effectiveness of Sustainability Leaders.

Figure 9: Relationship between the five competency groupings and related behaviours

Competency Groupings		Related Behaviours	
		Identified in the literature – listed by frequency of citation in past qualitative reviews	Evidenced in the research findings – ranked by critical and prominent behaviours in the sample
Listed in order of relative strength per competency grouping (established from sum of behaviour rankings per group)	[→] RESULTS DRIVEN action-biased with a passion for learning, an ability to ‘make things happen’ and confident in their decisions	Articulating Information Taking Action Developing Expertise Making Decisions	[↑] Developing Expertise (1) [+] Impressing People (2) [↓] Articulating Information (4) [→] Making Decisions (16) [-] Taking Action
	[↑] AN INCLUSIVE OPERATOR understands the motivations of others, caring attitude and a collaborative approach that engenders trust in their leadership	Understanding People Team Working Directing People Establishing Rapport	[↑] Establishing Rapport (3) [+] Valuing Individuals (6) [↓] Understanding People (10) [↓] Team Working (11) [-] Directing People
	[↑] A CHANGE AGENT willing to challenge established views, seize opportunities and embrace change with optimism	Convincing People Embracing Change Seizing Opportunities Generating Ideas Challenging Ideas Thinking Positively	[↑] Generating Ideas (8) [↑] Challenging Ideas (9) [↑] Thinking Positively (15) [↓] Seizing Opportunities (17) [-] Convincing People [-] Embracing Change
	[↓] ETHICALLY ORIENTED determined to act with integrity, has an ethical approach and builds trust-based relationships	Upholding Standards Interacting with People Empowering Individuals Conveying Self-Confidence	[↑] Interacting with People (5) [↑] Conveying Self-Confidence (13) [↓] Upholding Standards (14) [↓] Empowering Individuals (20)
	[↓] A VISIONARY THINKER inter-disciplinary understanding, strategic in their outlook with an ability to envisage the future and persevere through difficulties	Developing Strategies Pursuing Goals Providing Insights Exploring Possibilities	[↑] Exploring Possibilities (7) [↓] Developing Strategies (12) [↓] Pursuing Goals (18) [↓] Providing Insights (19)

The following commentary provides further clarification of the research findings for each competency grouping.

Results Driven

‘Developing Expertise (1)’ was the most critical behaviour identified. This provides corroborating evidence for traits in existing literature such as enhancing capabilities (Berns et.al., 2009), networked intelligence (Hames, 2007) and self-development (Wilson et. al., 2006). The addition of ‘Impressing People (2)’ (a behaviour not previously associated with Sustainability Leaders) suggests a growing need for Sustainability Leaders to attract attention, promote personal achievements and gain recognition in order to establish credibility (Saville et. al., 2012). This unexpected finding may also be explained by the fact that previous research methods have relied predominantly on qualitative and self-reported data; in which ‘impressing people’ might be regarded as immodest or unseemly, leading to research participants’ reticence in identifying its presence.

‘Articulating Information (4)’ is consistent with established traits including using business case language (Kakabadse et. al., 2009), making a clear and compelling case for change (Luenberger and Goleman, 2010) and the ability to speak in layman’s terms (Morton and Grayson, 2009). Less critically, evidence of ‘Making Decisions (16)’ also validates previous academic findings (Hind et.al., 2009; Kakabadse et. al., 2009; Wilson and Holton, 2003). It is notable however that ‘Taking Action’, a behaviour frequently cited in past qualitative reviews (Berns et. al., 2009; Kakabadse et. al., 2009; Luenberger and Goleman, 2010; SustainAbility, 2008; WBCSD, 2011), was not prominent within the sample. This might indicate that, although there is a common understanding that Sustainability Leaders should have a bias for action, this was not a behaviour typically exhibited by the current sample. Under-pinning this counter-intuitive finding may reflect the point, however, that Sustainability Leaders engage others in the activity of sustainability initiatives whilst their role remains more strategic.

Inclusive Operator

This study found that ‘Establishing Rapport (3)’ was a critical behaviour, less prevalent in past qualitative research and highlights the importance of building trust-based relationships (Morton and Grayson, 2009). The addition of ‘Valuing Individuals (6)’ is the second behaviour not previously associated with Sustainability Leaders. It refers to showing consideration and tolerance for the beliefs and world-view of others as critical to a person’s effectiveness (Saville et. al., 2012). Perhaps such behaviour has not been singled out before because Sustainability Leaders deem it to be integral to their role. Alternatively, emotional and cultural intelligence could be areas for further inquiry.

'Understanding People (10)' was a critical behaviour identified in both the sample and previous academic findings (Berns et. al., 2009; Hind et. al., 2009; Luenberger and Goleman, 2010; Quinn and Baltes, 2007; WBCSD, 2011; Wilson and Holton, 2003; Wilson et. al., 2006) . It demonstrates the need for Sustainability Leaders to have empathy, listen well and comprehend the motivations of others (Saville et. al., 2012). By comparison, the analysis revealed the surprising finding that 'Team Working (11)', which places value on traits such as collaboration (Luenberger and Goleman, 2010; Quin and Baltes, 2007) and involving others in decisions (Wilson and Holton, 2003), was prominent but not critical.

'Directing People' was removed from this competency grouping, despite its appearance in previous research (Egri and Hermna, 2000, Luenberger and Goleman, 2010; Wilson and Holton, 2003). This could be explained by the emerging theories that to be effective, leadership needs to be shared or distributed across the organisation (Bolden, 2011; Malik, 2011); and that Sustainability Leaders should strive to embed sustainability within business, as opposed to taking direct control and independent accountability (Visser and Crane, 2010). It could also be an indication that Sustainability Leaders are more effective when operating via personal influence and gravitas, as opposed to mandated authority (Trevino et. al, 2000).

Change Agent

'Generating Ideas (8)' was the most critical behaviour in this competency grouping, and reflected traits found in existing literature such as proficiency in product development (Berns et. al., 2009), the ability to innovate (Morton and Grayson, 2009; SustainAbility, 2008; Wilson and Holton, 2003) and original thinking (Wilson et. al., 2006). 'Challenging Ideas (9)' was also shown as critical, despite its limited presence in past qualitative reviews (Wilson et. a., 2006). This competency emphasises the need to question assumptions, challenge established views and argue one's own perspective (Saville et. al., 2012). Similarly, 'Thinking Positively (15)' was a prominent behaviour which has limited evidence in previous academic findings and may have been under-valued as a result (Morton and Grayson, 2009). This behaviour characterises Sustainability Leaders as being optimistic, recovering from setbacks and projecting cheerfulness (Saville et. al., 2012).

The presence of 'Seizing Opportunities (17)' as a prominent behaviour in the sample validated past qualitative research, and highlighted traits related to sales acumen (Berns et.al., 2009), sourcing business opportunities (Quinn and Baltes, 2007) and also the drive to contest resistance (Wilson et. al., 2006). Conversely, 'Convincing People' was found to be less important despite being frequently cited in previous academic findings (Berns et.al, 2009; Egri and Herman, 2000; Kakabadse et. al., 2009; Luenberger and Goleman, 2010; Morton and Grayson, 2009; Quinn and Baltes, 2007; SustainAbility, 2008; WBCSD, 2011; Wilson and Holton, 2003). Neither was 'Embracing Change' a prominent

behaviour in the sample, despite frequent references in previous qualitative reviews (Hind et.al., 2009; Luenberger and Goleman, 2010; Morton and Grayson, 2009; SustainAbility, 2008; Wilson and Holton, 2003; Wilson et. al., 2006). This confounding finding implies that traits such as shaping the opinions of others and tolerating uncertainty are not so critical to a Sustainability Leader's effectiveness. It may mean that, though both are highly valued behaviours, they are not currently present in the majority of Sustainability Leaders. This finding certainly warrants further investigation.

Ethically Orientated

'Interacting with People (5)' was a critical behaviour identified in both the sample and previous research (Hames, 2009; Luenberger and Goleman, 2010; Morton and Grayson, 2009; Wilson and Holton, 2003; Wilson et.al., 2006). This provided corroborating evidence for traits such as networking and stakeholder engagement (Saville et. al., 2012). 'Conveying Self-Confidence (13)' was also prominent in the findings, which shows the importance of Sustainability Leaders who project inner strength (Egri and Herma, 2000) and leave their ego at the door (Morton and Grayson, 2009).

Less critical than indicated by previous academic findings, 'Upholding Standards (14)' was nonetheless displayed as a prominent behaviour. This can be explained through research participant comments that although behaving ethically and acting with integrity is critical, maintaining confidence is not, with a number of Sustainability Leaders within the sample indicating their preparedness to whistleblow or disclose information publicly if they felt morally obligated to do so. 'Empowering Individuals (20)' was consistent with established traits including developing future leaders (Morton and Grayson, 2009), peer-to-peer learning (WBCSD, 2011), providing licence to operate (Wilson and Holton, 2003) and embracing diversity (Wilson et. al., 2006).

Visionary Thinker

'Exploring Possibilities (7)' was the most critical behaviour in this competency grouping. This reflected a number of traits found in existing literature such as conceptual thinking (Egri and Herman, 2000), interdisciplinary understanding (Hames, 2009), handling paradoxes and conflicting priorities (Kakabadse et. al, 2009), managing unquantified risks and new opportunities (Luenberger and Goleman, 2010) and taking an all encompassing view of a problem (WBCSD, 2011). 'Developing Strategies (12)' was a prominent behaviour in the sample and validates previous academic findings (Berns et. al., 2009; Hames, 2007; Hind et. al., 2009; Luenberger and Goleman, 2010; Morton and Grayson, 2009; Quinn and Baltes, 2007; WBCSD, 2011; Wilson and Holton, 2003; Wilson et. al., 2006), and highlighted the need to anticipate trends and envisage the future (Saville et. al., 2012).

'Pursuing Goals (18)' and 'Providing Insights (19)' were also prominent behaviours in both the sample and previous research. 'Pursuing Goals (18)' demonstrates the underlying traits of Sustainability Leaders' need for achievement (Egri and Herman, 2000), consistency of application and follow-through (Kakabadse et. al., 2009), ability to overcome barriers (Luenberger and Goleman, 2010), dogged determination and healthy impatience (SustainAbility, 2008), elimination of roadblocks (WBCSD, 2011), and resilience (Wilson et. al., 2006).

The presence of 'Providing Insights (19)' in the sample provided further evidence of traits including continuously increasing transparency (Berns et. al., 2009), discerning goals (Kakabadse et. al., 2009), synthesising trends and managing trade-offs (Luenberger and Goleman, 2010), identifying practical solutions (SustainAbility, 2008), problem solving (Wilson and Holton, 2003) and providing balanced judgement (Wilson et. al., 2006).

Trends across the sample

Each of the competency groups above bears further empirical investigation; to further explore the way behaviours are grouped into competencies, and the specific nature and significance of the behaviours themselves. Beyond this, analysis of the sample population showed that external consultants displayed stronger behavioural competencies compared to in-house Sustainability Leaders, particularly those working in Environmental Services. It also showed a diverse mix of competencies across sectors. This may be indicative of the value placed on discrete subsets of behaviours within each sector (either as a result of the available development opportunities or the prevalent work cultures) and has further implications for Sustainability Leaders moving between sectors. The number of years of professional experience in sustainability also had a significant impact on individual's effectiveness and the results suggest that the required behavioural competencies evolve over time. In a relatively new profession, this means that the Behavioural Competency Model may need to be refined periodically to ensure it's continued construct validity.

There was also strong evidence that first and post-graduate degrees strengthen a Sustainability Leaders' effectiveness; although this did not apply to the 'Inclusive Operator' competency grouping. This could indicate either that academic qualifications in Sustainability Leadership need to incorporate the related behaviours in their curriculum, or that Sustainability Leaders should look towards other qualifications or learning experiences to develop this competency grouping. The results also show that Sustainability Leaders' gender did not appear to have a significant impact on their effectiveness in-role, although it is worth noting that the literature suggests there is still disparity in career progression and pay for women in this field.

Limitations of the Study

The sample size of this research was statistically relevant; and the involvement of third-party raters and the contribution of subject matter experts strengthened the inductive category development used to define the five competency groupings. However, a larger and more diverse sample; plus input from a more diverse group of experts, could validate and refine the model further. Whilst the sample size was sufficient to identify behaviours that are manifest and construct relevant, Saville et al. (2012) recommends an excess of 300 people to reduce errors in item selection and to detect differences in validity coefficients. The Wave® questionnaire, whilst rigorously validated, also presents limitations. It is one lens on human behaviour and does not indicate the fundamental drivers or 'action logics' (Brown, 2012; Boiral et al., 2009) that may also be significant factors in effective leadership for sustainability.

Beyond this, the single greatest improvement to this research would come with independent measures of the organisational impact of sustainability leadership. For example, waste, energy or greenhouse gas reduction data. The challenge here, of course, is whether such impact can be linked causally to sustainability leadership behaviours.

5. Discussion

The review of literature showed that there is limited empirical research into the competencies of Sustainability Leaders (D'Amato et al., 2009, Fernandez et al., 2006). Even so, a number of practitioner frameworks that describe this newly emerging role have been published by professional institutions and recruitment firms (Wilson et al., 2006; Boston College, 2010; GACSO, 2011; BIC, 2013). It is also evident from the literature review that Sustainability Leaders are required to address many complex challenges: *"to integrate social, environmental, ethical human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders"* (European Commission, 2011). Various researchers have suggested that these 'wicked problems' (Grin, Rotmans, & Schot, 2011; Grint, 2008) and the extraordinary challenges of climate change and resource scarcity require extraordinary leadership (Boiral, Baron, & Gunnlaugsson, 2014; Metcalf & Benn, 2013). Metcalf & Benn (ibid.) argue that Sustainability Leaders operate within organisations that are complex adaptive systems that themselves operate within wider complex adaptive systems; and that the challenges of influencing the sustainability agenda of organisations in these circumstances are huge and require leaders *"who can read and predict through complexity, think through complex problems, engage groups in dynamic adaptive organisational change and have the emotional intelligence to adaptively engage with their own emotions"* (ibid., p.369). With Boiral et al. (2014) contending that perhaps only 15% of

adults have such 'post-conventional' attributes (Pfaffenberger, Marko, & Combs, 2011) the challenge of ensuring businesses have sufficient leadership capacity to respond to the wicked problems posed by climate change is daunting.

The aim of this research was to contribute to this challenge by developing a model for assessing the behavioural competencies of Sustainability Leaders. By analysing the behaviours of Sustainability Leaders via the Wave® questionnaire, the Behavioural Competency Model for Sustainability Leaders (Figure 4) has been refined; in order to assist the development of more effective leaders in this field in the future. The model is informed by past qualitative research (Figure 2) and validated by analysing behaviours displayed in the sample population (Figure 9). It highlights ten critical and ten prominent behaviours, which have been mapped to corresponding competency groupings. These are understood to be the behavioural competencies that such leaders require to respond effectively to sustainability challenges.

Although the context may be complex, the empirical data described in this study shows that the skills identified as most critical for Sustainability Leaders are familiar and learnable. Students of adaptive and transformational leadership literature (Heifetz et al., 2009; Boyatzis, 2008; Bass & Riggio, 2006) will not be surprised that the single most critical behavioural identified is a commitment to personal learning; and that five of the remaining top six critical behaviours relate to aspects of influencing skills. These being seen as even more critical than behaviours associated with thinking skills, problem solving, adaptability and delivering results. The practical implication of this for organisations is that the pipeline of sustainability leadership can be secured by identifying learning orientated managers who are adept at influencing colleagues at whatever level of the organisation rather than relying upon the recruitment of sustainability or environmental specialists to lead change initiatives.

Ultimately, this research aims to inform greater understanding of the behavioural competencies of Sustainability Leaders and to assist in developing their effectiveness. To address the sustainability challenges of this century and beyond, many more leaders require targeted development of such behaviours (Karakas, 2007). An important part of development, and a potential catalyst for it, is to understand the path of development itself (Global Association of Corporate Sustainability Officers, 2011). The Behavioural Competency Model detailed in this research provides a means of planning such a journey. The assessment of an individual's profile allows developmental practices to be tailored and can also be applied as a tool for recruitment. It enables Sustainability Leaders to map their current behaviours; to monitor their progress over time; to accelerate their own transformation and that of the people, organisations and systems they impact.

Although many top executives recognise that sustainability programmes bring long and short term benefits to their companies in the form of cost savings from resource efficiency, improved brand reputation and revenue generation from new products and markets (McKinsey, 2011), it remains rare that sustainability is brought to the heart of business strategy. In a study of 200 senior executives engaged in Cambridge University's Sustainability Leadership Programmes, Courtice (2012) showed that very few large companies had integrated sustainability into the design of their leadership development programmes; and even where this had been achieved sustainability tended to be reactive or bolted on rather than an integrated theme; such that it simply reflects and promotes existing business strategy rather than shaping it. Indeed various studies have shown that top-level commitment to sustainability generally does not stem from traditional or formal leadership programmes, and that progressive leaders in the business of sustainability have rarely been inspired by formal leadership development experiences (Bichard & Cooper, 2008; Courtice, 2012; Schien, 2015). More commonly such inspiration has been based on experiences beyond the company, sometimes rooted in much earlier experiences (that formed deep rooted value systems) and sometimes in transformational experiences later in life (from inspirational books or mentors or transformational experiences in the natural world). These experiences are commonly shaped by the realisation of our global context and societal values that help individuals develop a systems perspective and an intuitive awareness of our intrinsic inter-connectedness. Mainstream leadership development, however, tends to focus on building individual skills, motives, personal purpose, managing for results, and on building and managing teams.

In presenting a set of individual competences for Sustainability Leaders, it is important to recognise that sustainability leadership is a collective enterprise rooted in deep connectedness with the natural world and a plethora of known and unknown stakeholders. To this end, leading edge companies expose senior leaders to state-of-the-art thinking and practice, cross-sector, cross-function learning and experiential learning that leads to self-discovery. They also encourage individuals to engage in collaborative international projects, public discourse, strategic partnerships and policy development (Courtice, 2012). Our discussion also recognises that adaptive leaders in complex situations will be sensitive to different ways of seeing the situation and the system, as well as being aware of ways of acting, feeling and relating (Heifetz et al. 2009). Leadership development must, therefore, pay as much attention to the development of individuals' sense-making and action logic attributes (Brown, 2012; Boiral 2009, 2014) as to their behavioural competencies.

The competences identified through this study, therefore, present a building block in an individual's engagement with their developmental pathway, not an end or an aim in themselves. They simply offer one jigsaw piece in the process of building the collective qualities required to embed sustainability into corporate strategy. We also recognise that building collaborative capacity across corporate organisations is unlikely to benefit from homogenising the skills and qualities required by every

individual: but rather a recognition that these competences need to be built across a wide range of individuals within and beyond the organisation.

Sustainability Leaders are invited to draw upon this research to accelerate their own transformation and that of the people, organisations and systems they influence. We also envisage those developing programmes of learning for Sustainability Leaders using the results of this study to add some empirical heft to any focus on individual or group skills development. Indeed, organisations might replicate the research method described above in developing peer review based training approaches for Sustainability Leaders.

As researchers, we are left with the daunting task of making the difficult links between the demonstration of the critical and prominent behaviours described in this study with improvement in organisational performance and measurable benefits to the triple bottom line. Whilst it was not the aim of this study to develop new theory, we are also intrigued by the potential correlations between behavioural competencies and the intrinsic action logics and worldviews of Sustainability Leaders – which provides fruitful opportunity for further research.

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