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**A successive pro-environmental behaviour framework**

Purva Tavri

Faculty of Arts, Design and Architecture, Kingston University

Purva Tavri is a PhD researcher at Kingston University

Email: [purvatavri@gmail.com](mailto:purvatavri@gmail.com)

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## 1 Abstract

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3 This paper presents a successive pro-environmental behaviour framework based on four key models  
4 that develop a common argument that, in instances where communicating information is insufficient  
5 for triggering and maintaining changes in behaviour, other strategies are needed. These four models  
6 are the 'theory of planned behaviour' framework of Ajzen and Fishbein (1980), a model of pro-  
7 environmental behaviour by Kollmuss and Agyeman (2002), a conceptual model for recycling  
8 behaviour change by Valle *et al.* (2005), and Stern's (2000) value-belief-norm model.  
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12 The resultant pro-environmental behaviour framework has been used as an analytical tool to inform  
13 the methodology, and for carrying out the empirical work to investigate re-use behaviour at the  
14 organisational level in the UK. The framework is developed by analysing broad areas of argument in  
15 relation to pro-environmental behaviour: how it is developed and how it can be maintained.  
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19 This paper presents the combination of snowballing and an inductive approach as appropriate  
20 methods utilised respectively for the selection of studies, and the development of the successive pro-  
21 environmental framework.  
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25 The successive pro-environmental framework is called Communication, Engagement/Action,  
26 Behavioural Maintenance, and Avoidance of the value action gap (CEBA).  
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29 **Keywords:** Environment, Recycling and re-use of materials, Corporate responsibility  
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## 2 Introduction

36 This paper obtains the Kollmuss and Agyeman's definition of pro-environmental behaviour, which  
37 means 'behaviour that consciously seeks to minimize the negative impact of one's action on the  
38 natural and built world (e.g. minimize resource and energy consumption, use of non-toxic substances,  
39 reduce waste production).' (2002, p. 240).  
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42 With the focus of developing the framework for investigating re-use behaviour at the organisational  
43 level, this paper takes the stance proffered by Bell, Greene and Fisher that 'many seem to think that  
44 solving our environmental problems requires only the right technologies. In contrast, relatively less  
45 attention has focused on strategies for preserving the environment that involves changes in people's  
46 behaviour' (2001, p. 469).  
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50 This paper aims to identify two broad areas of argument around pro-environmental behaviour: how it  
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### 3 Literature review

Communication, engagement/action, behavioural maintenance, and avoidance of the value action gap are the identified four main dimensions that can aid in investigating the mechanisms required to facilitate and maintain re-use behaviour at the organisational level to make it a behavioural norm.

Rimal and Real define behavioural norms as 'codes of conduct that either prescribe or proscribe behaviours that members of a group can enact' (2003, p. 185). They also regard them as social norms; therefore, they cannot exist without communication between group members. Furthermore, they divide social norms into descriptive and injunctive categories.

Descriptive norms are defined as what people do (Cialdini *et al.*, 1990). Thøgersen (2006) describes descriptive norms as consisting of perceptions of normal behaviour. In contrast, injunctive norms are defined by Cialdini *et al.* as 'rules or beliefs as to what constitutes morally approved and disapproved conduct.' Essentially, 'injunctive norms specify what *ought* to be done' (Cialdini *et al.*, 1990, p. 1015).

Some of the studies on normative messaging represent messaging appealing to descriptive and injunctive norms are an important factor in facilitating behaviour change (Cialdini *et al.*, 1990; Cialdini, 2003; Cialdini *et al.*, 2006; Kallgren *et al.*, 2000; Schultz *et al.*, 2007; Thøgersen, 2006). Nevertheless, there are four key models that develop a common argument that, in instances where communicating information is insufficient for triggering and maintaining changes in behaviour, other strategies are needed. These four models are the 'theory of planned behaviour' framework of Ajzen and Fishbein (1980), a model of pro-environmental behaviour by Kollmuss and Agyeman (2002), a conceptual model for recycling behaviour change by Valle *et al.* (2005), and Stern's (2000) value-belief-norm model. However, all of these models fail to provide strategies for avoiding the value action gap, which is a barrier to transforming intentions or attitudes into habits or normative behaviours. This barrier of complexity is not limited to the behaviour of individuals, but also has a consequent effect at the organisational level. This is because organisational and individual behaviour patterns are intertwined, as an organisation is made up of individuals. Nonetheless, these models present the effectiveness of salient environment, which indicates that investigating the re-use behaviour of selected organisations, identified as being in the vanguard of promoting environmental activities, could demystify this barrier, as the organisations can be considered to represent a pro-environmental salient environment.

The framework is 'successive' because it is succeeding the models mentioned above. In so doing, the framework acknowledges the factors facilitating behaviour change identified by the aforementioned models and also presents an additional category to fill the identified value action gap.

### 4 Method

To develop the successive pro-environmental framework, 75 pieces of pro-environmental behaviour literature were reviewed, consisting of 40 empirical studies and 35 theoretical studies. These pieces of literature are coherent as they were selected via snowball sampling.

#### 4.1 Snowball Sampling

1  
2 Lecy and Beatty (2012) present a method of structured literature review in which selection of studies  
3 through snowball sampling ensures that the sample contains key publications in the field. They claim  
4 that this method serves 'to correct potential bias in unstructured literature reviews and to provide a  
5 way to create a parsimonious representation of the most salient research in a field' (Lecy and Beatty,  
6 2012, p. 13).

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10 In this method, construction of the sample is based upon a selection of 'seed articles' (Lecy and  
11 Beatty, 2012). The seed articles selected were: Ajzen and Fishbein (1980); Campbell (2007); Cialdini  
12 *et al.* (2006); Cox *et al.* (2010); Fielding *et al.* (2008); Groot and Steg (2007); Kallgren *et al.* (2000);  
13 Rimal and Real (2003); Robinson and Read (2005); Thøgersen (2006); Valle *et al.* (2005).

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15 From these 11 seed articles, another 64 studies were selected. First, 41 studies citing the seed  
16 studies were selected. Then, a further 23 studies that cited the studies citing the seed articles were  
17 selected.

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22 Lecy and Beatty state that an advantage of selection of studies through snowball sampling is that 'it  
23 adds value by minimising the possible biases associated with cognitive mapping and enables testing  
24 hypotheses about actual citation patterns within a given research domain'. However, they  
25 acknowledge that this technique is limited to the 'citation patterns and provides little insight into the  
26 theoretical content' of the selected studies (2012, p. 2).

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30 Adopting snowball sampling enables selection of studies or theories that are consistent, which  
31 according to Marsh and Stoker (1995) can contribute to develop a firm framework that is formed by  
32 the selection of the studies with relevant empirical evidence and not solely grounded in observed  
33 cases that provide 'anecdotal' theoretical claims.

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37 For developing the framework, some key methodological studies were reviewed to shed light on  
38 grounded theory. These studies were Gersick (1988); Glaser and Strauss (1967); Locke (2001);  
39 Marsh and Stocker (1995); Mills and Briks (2014) that indicated inductive approach as an integral part  
40 of the grounded theory, which brings fresh perspectives and new theories, enlivening and modifying  
41 existing theoretical frameworks. This, in particular, is a key element that falls in line with the purpose  
42 of investigation. Thus, the successive pro-environmental framework is developed using an inductive  
43 approach.

#### 4.2 The Inductive Approach

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49 The inductive approach involves establishing upper-level, lower-level and main categories, which  
50 constitute the whole framework through coding and grouping textual materials (Elo and Kyngas, 2007;  
51 Locke, 2001; Mayring, 2000; Thomas, 2003).

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57 In his work on the general inductive approach for analysing qualitative data, Thomas (2003) used raw  
58 textual data to form links in order to derive findings. According to him, the first step is extracting the  
59 core meaning evident in the text that is relevant to the research objective; in an inductive approach,  
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1 this is forming 'upper-level categories'. Secondly, the extracted textual information is divided into  
 2 themes or categories, which are known as 'lower-level categories'. Finally, the produced themes or  
 3 categories are further analysed to develop the 'main categories'.

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 5 As per Thomas's (2003) approach, the selected pro-environmental behaviour studies were grouped  
 6 together and collated using Microsoft Excel and were separated out for the purpose of analysis. They  
 7 are divided into study type, location, participants, size, situation, method, findings, and conclusion.  
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 10 The 'upper-level categories' were formed through an initial review of the selected pro-environmental  
 11 behaviour studies. This involved selecting as many headings as seemed relevant for the  
 12 establishment of the framework.  
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 15 Table 1 below shows the terms that were identified based on the number of instances with which the  
 16 terms and their meaning appeared in the similar context during the initial review. After that, the 'lower-  
 17 level categories' and the 'main categories' were formed which is elaborated next.  
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 20 Table 1: Upper-level categories derived from an initial review of pro-environmental behaviour studies

Situational norm	Informational social influence	Self-awareness
Persuasion	Resource and technology	Regulation and policy
Value action gap	Government system	Sustainable
Ethical behaviour	Ethical responsibility	Social norm
Misperception	Boomerang effect	Identity relevance
Subjective norm	Automatic social perception	Stereotypes
Personality traits	Associative strength	Attitude change

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 30 The 'lower level categories' are here referred to as 'variables', and the 'main categories' are called  
 31 'categories'.  
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 34 These variables and categories were formed according to my perception and analysis of the studies.  
 35 Such an approach is susceptible to bias. Nevertheless, the combination of snowball sampling, and the  
 36 inductive approach can be considered as playing a part in selecting coherent studies and bringing a  
 37 fresh perspective by enlivening and modifying existing pro-environmental behaviour studies (Locke,  
 38 2001; Leczy and Beatty, 2012; Marsh and Stoker, 1995), which this paper accounts as contributing  
 39 towards overcoming biases.  
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## 43 44 45 46 **5 The Theoretical Framework**

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 48 The categories in the successive pro-environmental framework are communication,  
 49 engagement/action, behavioural maintenance, and avoidance of the value-action gap, or CEBA for  
 50 short. The following sections explain the formation of variables and categories through review and  
 51 analysis of the selected pro-environmental behaviour studies.  
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## 5.1 Communication (C)

This section explores the selected studies that indicate 'communication' as an important factor for facilitating behaviour change. In so doing, the section forms 'lower-level categories' or 'variables' by analysing and drawing out the themes from the selected studies.

The formation of variables within this category draws directly on Kelman's (1958) study on the types of communication, whereby, he reports the experiment carried out from a broader theoretical framework that analysed different processes of attitude change resulting from social influence. In his study, Kelman delineates high power communication, that can contribute to lasting change in individuals' attitudes and beliefs, and low power communication, which leads only to superficial and short-lived changes.

Since the investigation aims to evaluate re-use behaviour longevity, only high types of communication have been used as variables. They are high means control, high attractiveness, and high credibility. The current relevance of this sixty-year-old study (Kelman, 1958) is validated by presenting compatibility of Kelman's types of high power communication with the relatively recent behaviour studies in Table 2 featuring communication as a crucial category in promoting behavioural change.

Table 2: Studies featuring communication as a crucial category

Cashore and Vestinsky (2000)	Schultz <i>et al.</i> (2007)
Cialdini (2003)	Stern (2000)
Gockeritz <i>et al.</i> (2010)	Thaler and Sunstein (2009)
Kagan <i>et al.</i> (2003)	Thogersen (2007)
Lindenberg and Steg (2007)	Thomas <i>et al.</i> (2004)
Mannetti <i>et al.</i> (2004)	Valle <i>et al.</i> (2005)
Rimal and Real (2003)	Wenzel (2005)

The section below discusses the studies featuring the first variable under the communication category, high means control.

### 5.1.1 *The first variable (high means control)*

In his study, Kelman (1958) represented influence through mandatory rules and regulations as 'high means control'. He identifies 'high means control' with compliance, writing that:

compliance can be said to occur when an individual accepts influence because he hopes to achieve a favorable reaction from another person or group. He adopts the induced behaviour, not because he believes in its content, but because he expects to gain specific rewards or approval and avoid specific punishments or disapproval by conforming. Thus the satisfaction derived from compliance is due to the social effect of accepting influence (1958, p. 53).

In their study on framing the responsibility for strategic leadership of ethical behaviour in businesses, Thomas, *et al.* (2004) indicate that the initiative for ethical change needs to originate from the leaders within the organisation. They suggest that behaviour can be enforced by leaders who strengthen and

1 communicate ethical values throughout an organisation. They present examples such as passing on  
2 the cost of ethical failure via fines, penalties, legal investigations, and a potential threat to the  
3 reputation of the business.

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5 The importance of enforcement for maintaining organisations' reputations, through governance  
6 systems, regulation, and environmental policy is also emphasised by Cashore and Vestinsky (2000)  
7 in their study of influencing corporate behaviour. They looked at three forestry organisations in British  
8 Columbia, Alberta, and Alabama, and concluded that 'firms try to accommodate state officials'  
9 interests when they know decisions may be taken that could affect firms' operations' (2000, p. 10).

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13 One way of facilitating pro-environmental behaviour change is by establishing compliance. Within the  
14 waste management sector, duty of care is one of the legislative regimes established in the UK under  
15 the Environmental Protection Act 1990, followed by various waste directives. Duty of care and the  
16 waste directives form part of the UK waste strategy for moving up the waste hierarchy and achieving  
17 zero waste to landfill. Therefore, in investigation, the empirical study used waste hierarchy and zero  
18 waste to landfill as the elements to measure compliance among organisations.

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22 The following section examines the studies featuring the second variable within the communication  
23 category, high attractiveness.

### 24 25 26 27 **5.1.2 The second variable (high attractiveness)**

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30 Kelman (1958) defines 'high attractiveness' as an individual's identification within a group, and says  
31 that:

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34 identification can be said to occur when an individual accepts influence because he  
35 wants to establish or maintain a satisfying self-defining relationship to another person  
36 or a group. This relationship may take the form of classical identification, in which the  
37 individual takes over the role of the other, or it may take the form of a reciprocal role  
38 relationship. The individual actually believes in the responses which he adopts through  
39 identification, but their specific content is more or less irrelevant. He adopts the induced  
40 behavior because it is associated with the desired relationship. Thus the satisfaction  
41 derived from identification is due to the act of conforming as such (1958, p. 53).

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47 Wenzel (2005) conducted a study with 64 students of an Australian university, who believed that  
48 taxpayers should show more honesty in their tax affairs than they believed people do under the  
49 current system. At the same time, Wenzel also carried out a similar study at the household-level  
50 investigating the perceptions of 1,500 Australians on paying taxes. In both scenarios, the participants  
51 were provided with feedback about the actual number of taxpayers, which was more than the  
52 participants perceived. This feedback changed the perception of the participants about taxpayers,  
53 thus leading to mass persuasion. This paper notes that such form of intervention through feedback  
54 could be considered as enabling development of identification via obtaining 'a satisfying self-defining  
55 relationship to another person or a group' (Kelman, 1958, p. 53).



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Wenzel (2005) further stated that this form of communication through feedback could also be successful in the field of environmental behaviour and health. The significance of feedback in the field of environmental behaviour is indeed demonstrated by Vlek (2000) in his study, whereby, he surveyed different levels and global impact of major environmental problems. In his study, Vlek identified six lines of environmental psychological research ranging from environmental attitudes to environmental policy decision support system. Vlek concluded that communicating feedback is an essential factor contributing to preventing environmentally harmful behaviours because lack of regular feedback about environmental issues could cause ignorance and lack of attention towards environmental problems. This according to him may further lead to 'gullibility, helplessness, and apathy' (2000, p. 162).

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Along similar lines, Thaler and Sunstein's (2009) study on 'nudge', which found that one way in which a shift in behaviour can be achieved is simply by informing people about the performance of others. They said that 'sometimes the practices of others are surprising, and hence people are much affected by learning what they are' (2009, p. 71).

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External or contextual forces including interpersonal influences and community expectations are also highlighted by Stern (2000) as significant factors contributing to behavioural change. This is also supported by an empirical study of pulp and paper manufacturers in British Columbia, Canada, Australia, New Zealand, Washington, and Georgia by Kagan *et al.* (2003). The study found that concerns expressed by environmental groups against pollution led to a change in behaviour within organisations, since 'environmental activists can intensify economic pressures by generating adverse publicity about polluting firms and organising consumer boycotts' (2003, p. 68).

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Thaler and Sunstein (2009) argue that peer pressure, and internal and external feedback are among the crucial factors contributing to social influence in the field of decisions about health, wealth, and happiness. They observe that 'social influences come in two basic categories. The first involves information. The second involves peer pressure' (2009, p. 58).

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One recent successful example is the increase in the use of seat belts in Montana through the 'Most of Us Wear Seatbelts Campaign'. This campaign was aimed at reframing seatbelt use as a social norm. Owing to the success of the campaign, the self-reported use of seat belts increased significantly, thereby making it a norm (Linkenbach and Perkins, 2003).

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Discussing the importance of relating pro-environmental behaviour with positive social identities in campaigns, Mannetti *et al.* in their study on identifying behavioural intentions concerning household recycling concludes 'identity as an antecedent of pro-environmental behaviour [that] provides a broader perspective to persuasion campaigns' (2004, p. 234). The study surveyed 230 Italians, whereby a questionnaire concerning opinions about household recycling behaviour was administered. The result suggested that one of the ways in which households could be influenced towards the use of refuse collection and disposal facilities is via campaigns portraying recycling behaviour as prestigious, and anti-environmental behaviour as "out-of-fashion".

1 To analyse organisations' ways of gathering internal and external responses to their environmental  
2 and re-use activities, the investigation used feedback and comparative analysis as assessment tools.

3 The next section reviews the studies providing evidence of the third variable in the communication  
4 category, high credibility.  
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### 7 **5.1.3 The third variable (high credibility)**

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10 Influence through knowledge and facts, is designated 'high credibility' by Kelman (1958). In this study  
11 three indicators of high credibility are used: achievements, guidelines, and innovation. Kelman  
12 describes 'high credibility' as internalisation, noting that:  
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16 internalization can be said to occur when an individual accepts influence because the  
17 content of the induced behavior - the ideas and actions of which it is composed - is  
18 intrinsically rewarding. He adopts the induced behavior because it is congruent with his  
19 value system. He may consider it useful for the solution of a problem or find it congenial  
20 to his needs. Behavior adopted in this fashion tends to be integrated with the  
21 individual's existing values. Thus the satisfaction derived from internalization is due to  
22 the content of the new behavior (1958, p. 53).  
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27 Schultz *et al.* (2007) conducted an experiment on 290 households in San Marcos, California, USA.  
28 The purpose of the study was to increase awareness of energy usage among households. The study  
29 highlights the importance of the method of presentation of a message for its effectiveness in changing  
30 behaviour. When consumers were supplied with a descriptive normative message, giving facts about  
31 consumption, this created a boomerang effect, resulting in an increase in consumption. In contrast,  
32 when the same message was supplied in an injunctive normative form, by providing a happy smiley  
33 (to those who consumed less) and sad smiley (to those who consumed more), this eliminated the  
34 boomerang effect and resulted in less energy consumption.  
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40 A two-year study was conducted by Gockeritz *et al.* (2010) of 1,604 residents in California. The  
41 purpose was to assess whether normative social influence is moderated by personal involvement and  
42 injunctive normative beliefs. The results showed that facts and personal beliefs play a significant role  
43 in influencing behaviour. The study concluded that when communicating messages to groups or  
44 individuals, the greatest impact on behaviour comes from a combination of descriptive and injunctive  
45 normative information.  
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50 In 2003, Cialdini carried out a study demonstrating the influence of messages providing information  
51 on individual behaviour. He observed visitors at Arizona's Petrified Forest National Park over five  
52 consecutive weekends. Around one ton of wood was stolen from the park by visitors every month. To  
53 modify attitudes to theft, an injunctive message was displayed at entrances and exits, saying 'Please  
54 don't remove the petrified wood from the Park, in order to preserve the natural state of the Petrified  
55 Forest.' This message was accompanied by 'a picture of a lone visitor stealing a piece of wood, with a  
56 red circle and bar symbol superimposed over his head' (Cialdini, 2003, p. 107). The result led to the  
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decrease in thievery and this outcome of the study illustrates that providing knowledge in an injunctive normative message is effective in a situation characterised by socially reprehensible conduct.

These studies suggest that behaviour is more likely to change when messages are delivered in a way that positively emphasises socially acceptable behaviour, rather than focussing on what might be perceived as draconian rules and regulations. This is further indicated by Lindenberg and Steg (2007) in their study on guidance regarding environmental behaviour, which suggested that in order to motivate normative behaviour, knowledge and awareness of the impact associated with the behaviour are among the important elements that need consideration.

The studies reviewed above demonstrate the utilisation of descriptive normative messages, namely, facts, evidence, and information, alongside injunctive normative messages, consisting of rules and beliefs about what is morally acceptable. Both types of message can play a part in identifying and evaluating the capacity of re-use activities to attain strong sustainability at the organisational level.

How a message is communicated can determine its success or failure in changing behaviour. For instance, in the studies discussed above, the simultaneous use of descriptive and injunctive messages helped avoid the boomerang effect as the content of the messaging intended to harmonise the messaging with individuals or organisations value system, which this thesis notes could lead to internalisation.

Although the variables - high means control, high attractiveness and high credibility are represented separately in Figure 1 below, in reality there is a complex interrelationship between them. In the real-life investigation of re-use behaviour, how variables are utilised can vary depending on the type of organisations.

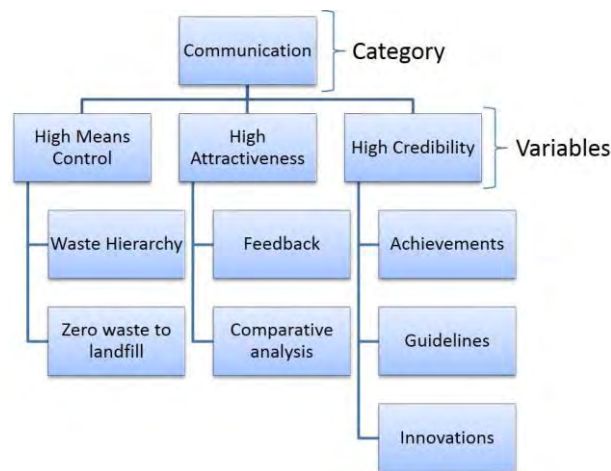


Figure 1: Communication variables, formed by sorting and grouping the upper-level categories

The communication category and variables can help to facilitate behaviour change, by affecting the ways in which individuals view themselves and their place within a wider group. Nevertheless, in their study of the influence of perceived norms, Rimal and Real (2003) found that communicating a norm is one thing, but creating action based on that norm is much more complex. As they put it, 'individuals

may perceive high levels of prevalence and strong normative pressures and yet not engage in the behaviour' (2003, p. 187).

The fact that the communication category alone is insufficient to drive sustained change indicates a gap, which Rimal and Real (2003) suggest can be filled by activating the norm: essentially *acting* upon the given communication. The section below elaborates the ways in which a norm is activated, by engaging or acting upon it.

## 5.2 Engagement/Action (E)

This section explores those pro-environmental studies that feature engagement/action as an important category in behaviour change. In doing so, the section forms 'lower-level categories' or variables by analysing and drawing out themes from the following behaviour studies in Table 3.

Table 3: Studies featuring engagement/action as a crucial category

Aarts <i>et al.</i> (2003)	Dolan <i>et al.</i> (2012)	Peng and Chiu (2010)
Aarts and Dijksterhuis (2003)	Goldstein <i>et al.</i> (2008)	Prendergrast <i>et al.</i> (2008)
Bargh and Ferguson (2000)	Groot and Steg (2009)	Rothman (2000)
Barr <i>et al.</i> (2001)	Kallgren <i>et al.</i> (2000)	Steg and Vlek (2009)
Campbell (2007)	Kelman (1958)	Thogersen (2006)
Cialdini <i>et al.</i> (1990)	Kong <i>et al.</i> (2002)	Thogersen (2007)
Collier and Esteban (2007)	Lachman <i>et al.</i> (1994)	Vermeir and Verbeke (2006)
Dewhurst and Thomas (2003)	Nye and Hargreaves (2010)	WRAP (2018j)
Dijksterhuis <i>et al.</i> (2000)	Organ <i>et al.</i> (2006)	Zhang (2011)
Dijksterhuis and Bargh (2001)	Payne and Raiborn (2001)	

The following section surveys the studies providing evidence of the first variable under engagement/action, namely, non-economic variables.

### 5.2.1 *Non-economic variables*

The non-economic variables identified here are situational norms, social context, and salient environment that studies below indicate facilitates shared goal seeking and play a part in developing an associative strength and cooperative type of behaviour. However, these non-economic variables are interdependent and thus cannot be represented in a sequential manner.

Cialdini *et al.* (1990) conducted a study on the impact of norms, involving an experiment on 139 visitors at the parking garage of a university-affiliated hospital. Visitor behaviour within both heavily littered and clean parking areas was observed for six days. Leaflets were dropped by visitors in the littered environment, but not in the clean environment. The study concluded that focus of attention and/or the salient environment were important components inclining individuals towards a course of action.

Along similar lines, Kallgren *et al.* (2000) conducted a study on 107 psychology students at Arizona State University to examine categories that might affect the relationship between norm focus and behaviour. In the university, corridors and stairs were pre-littered and different norms were displayed;

1 some anti-litter norms were very specifically related to the university and its environment, and some  
 2 gave more general anti-littering messages. Participants were found to be less inclined to litter in a  
 3 corridor displaying an anti-litter norm that was specifically related to their environment. Therefore, the  
 4 results show that a norm has a greater impact on behaviour when it is salient to the surrounding.  
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 7 This positive effect associated with messages that are specific to the surrounding area was also found  
 8 by Aarts and Dijksterhuis (2003); Aarts *et al.* (2003); Dewhurst and Thomas (2003); Dolan *et al.*  
 9 (2012); Nye and Hargreaves (2010); Steg and Vlek (2009); Thogerson (2006); Thogerson (2007);  
 10 Thomas (2003); Vermeir and Verbeke (2006) in their individual and organisational studies.  
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 13 These studies indicate that encouraging action towards shared goals is the key to converting  
 14 communication into action. Specifically, when a goal is agreed, habitual plans or actions in order to  
 15 achieve that goal are automatically activated (Bargh and Ferguson, 2000). In this way, a collective  
 16 goal can change individual attitudes and behaviour, and therefore lead to a wider transformation  
 17 within the group.  
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20  
 21 This point is further emphasised with the example of the '*Planet Earth II effect*', which resulted in the  
 22 formation of a collective goal in the UK of reducing plastic pollution through the UK Plastics Pact<sup>1</sup>  
 23 (WRAP, 2018j). So far, 96 businesses from across the entire plastics value chain have signed up to  
 24 this shared goal.  
 25  
 26

### 27 **5.2.1.1 Associative strength (cooperative behaviour)**

28  
 29 It is contended that activating shared goal seeking, automatically elicits certain behaviours that  
 30 develop the associative strength (Collier and Esteban, 2007). Associative strength is a condition that  
 31 is critical for enabling normative behaviours to develop and be maintained (Kong *et al.*, 2002).  
 32 Attaining an associative strength is further indicated as building a cooperative behaviour (Collier and  
 33 Esteban, 2007).  
 34

35  
 36 Cooperative behaviour is defined by Organ *et al.* in their study of organisational citizenship behaviour  
 37 as 'individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward  
 38 system, and in the aggregate promotes the efficient and effective functioning of the organization'  
 39 (2006, p. 3). In his previous study, Organ defined associative strength as 'performance that supports  
 40 the social and psychological environment in which task performance takes place' (1997, p. 95).  
 41

42  
 43 Peng and Chiu (2010), in their study examining the underlying cooperative relationship between  
 44 supervisor and employee, indicate that cooperative behaviour within an organisation aids in effective  
 45 productivity, coordinating team members to enable effective performance towards the enhancement  
 46 of resources. Furthermore, Zhang, (2011) in his study of cooperative organisational behaviour,  
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<sup>1</sup> The UK Plastics Pact aims to transform the UK plastic packaging sector by 2025 by aiming for '100% of plastic packaging to be re-usable, recyclable or compostable; 70% of plastic packaging effectively recycled or composted; take actions to eliminate problematic or unnecessary single-use plastic packaging items through redesign, innovation or alternative (re-use) delivery models; and 30% average recycled content across all plastic packaging.' (WRAP, 2018j)

1 provides evidence that this type of behaviour is encouraged by giving feedback on performance that  
2 is not limited to economic benefits, but also places value on instances where employees have  
3 travelled 'the extra mile'. Kelman (1958) describes this as the adoption of a value system by a group  
4 that influences others to cooperate within this value system, in order to receive a favourable reaction  
5 from the group.  
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7  
8 In their pro-environmental behaviour study, Bargh and Ferguson (2000) indicate that a cooperative  
9 situation automatically activates the norms that then guide intergroup behaviour towards the shared  
10 goal. Zhang (2011) further states that at the organisational level, cooperative behaviour provides  
11 evidence of growth in productivity, efficiency, and customer satisfaction.  
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14 Associative strength implies a cooperative behaviour that facilitates cohesion within the organisation,  
15 which is also evident at the household level. Barr *et al.* (2001), in their analysis of recycling behaviour  
16 in Exeter, show the formation of cooperative behaviour among households, which, over time,  
17 contributed to sustained behaviour change. Barr *et al.* (2001) developed three predictors of  
18 cooperative behaviour: environmental values, situational variables, and psychological variables. The  
19 study concluded that environmental values among individuals, along with social pressure to perform  
20 in an environmentally-friendly manner, were the two primary forces that built cooperation among  
21 households in Exeter. The findings indicate that peer pressure leads to cooperation, and cooperation  
22 had a direct impact on waste minimisation among households, which led to sustained behavioural  
23 change.  
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30 Associative strength develops willingness to act towards a common goal. This can be seen in studies  
31 by Campbell (2007), Goldstein *et al.* (2008), and Payne and Raiborn (2001). Associative strength, as  
32 represented in these studies, is a willingness to change current behaviour because of individuals'  
33 strong identification with an organisation, which can, in turn, be translated into cooperative behaviour,  
34 encouraging them to begin working towards a common goal.  
35  
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38 Two very distinct studies, one on moving business towards sustainable consumption behaviour (Kong  
39 *et al.*, 2002), and another on employee commitment in an organisation, (Collier and Esteban, 2007)  
40 present associative strength as a relevant and useful characteristic that contributes to changing  
41 behaviour and maintaining the change.  
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45 There is a direct relationship between associative strength and automatic behaviour. Empirical studies  
46 by Dijksterhuis *et al.* (2000) and Dijksterhuis and Bargh (2001) indicate that associative strength  
47 functions through communication, which leads to the development of stereotypes. Stereotypes are  
48 commonly considered to be negative; however, they can function in a positive way in this instance, by  
49 activating associated traits which create real motor change representations (i.e. neurological  
50 changes) that in turn trigger reward patterns within the brain, resulting in lasting change in actual  
51 behaviour.  
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### 57 **5.2.1.2 Discussion**

58 Thus far, we have seen that salient environment, social context, and situational norms can  
59 automatically transform communication into action by developing associative strength. In doing so,  
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1 associative strength could bring effective productivity, efficiency, customer satisfaction, cohesion,  
2 imitation, and plays a part in making a behaviour into a social norm. Nonetheless, it is important to  
3 acknowledge that the associative strength is not inherently positive: in some cases, it may lead to  
4 destruction, inefficiency, and unproductiveness, leading to organisations becoming uncaring and  
5 defeatist. However, finding the factors that contribute to building associative strength is here  
6 considered a positive move, as this will enable re-use behaviour.  
7

8  
9 Since, the non-economic variables identified here, viz. situational norms, social context, and salient  
10 environment, are interdependent and thus, depending on the context, they might not have this  
11 transformative effect if applied individually in real-life situations.  
12

13  
14 To develop associative strength (cooperative behaviour) along with these non-economic variables,  
15 availability of resources is a key factors contributing to activation of shared-goal seeking. Thus, the  
16 section below presents studies providing evidence for the second variable under the  
17 engagement/action category, economic variables.  
18  
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### 20 21 22 **5.2.2 Economic variables**

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24 Lachman *et al.* (1994) in their study on analysing cross-national management and organisations  
25 argue that resources and the availability of technology have an important impact on organisations'  
26 ability to adapt in response to pressure. Thogersen (2007) in his study on the activation of social  
27 norms builds on this argument by indicating that greater availability of resources is an economic  
28 benefit, which increases the chance of cooperation and motivates behaviour towards a required goal.  
29 In other words, the availability of money or resource incentives motivates not only at the level of  
30 individuals, but also across businesses more broadly.  
31

32  
33 Campbell's (2007) study of corporate social responsibility (CSR) suggests that financially strong  
34 companies are more likely to behave in a socially responsible manner. Thus, those companies are  
35 more adaptive to behavioural change. Furthermore, in their study investigating the international public  
36 policy spectrum to understand the drivers behind people's choices and behaviour, Prendergrast *et al.*  
37 (2008) identify the availability of financial resources as a key driver for influencing behavioural  
38 change.  
39

40  
41 Thus, although the non-economic variables discussed above can significantly elicit behaviour by  
42 activating a goal, economic variables, such as the availability of resources, are also important for  
43 transforming communication into engagement or action.  
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47 Moreover, economic and non-economic variables need to be utilised in real-life situations in a  
48 collective manner, as their combination has the power to engage groups or individuals towards pro-  
49 environmental behaviour by developing associative strength. Furthermore, although for convenience  
50 these variables are represented separately in Figure 2 below, in real-life situations, investigating non-  
51 economic and economic variables facilitating pro-environmental behaviour may vary depending on  
52 the type of re-use (waste management) activities within organisations.  
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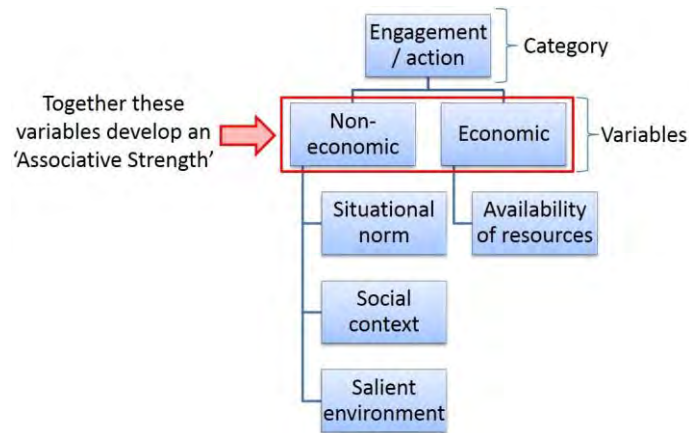


Figure 2: Engagement/action variables, formed by sorting and grouping the upper-level categories

Rothman's (2000) study of behavioural maintenance argues that a link between achieving the goal and encouraging action needs to be developed in order to transform behaviours from new actions to normative and embedded habits. In essence, he means that the newly acquired behaviour needs to be maintained and repeated over time in order to transform it into a habit or a normative behaviour.

The section below establishes the importance of maintaining behaviour as another important category for facilitating behaviour change, which was identified in Section 2 above as a factor missing from the existing key pro-environmental models.

### 5.3 Behavioural maintenance (B)

Making a change is one thing, maintaining and monitoring this change requires a more strategic approach. Evaluation of the new behaviour (in the case of re-use: specifically re-starting and maintaining re-use behaviour) depends on an effective monitoring process.

Measuring and monitoring are essential to ascertain that the changed behaviour is maintained to establish it as a normative behaviour (Rothman, 2000). Vlek (2000) argues that regular measuring and monitoring of changed behaviour helps to identify and overcome practical barriers and challenges.

The following behaviour studies discuss behavioural maintenance as a crucial category in behaviour change within individuals, group or organisations: Budeanu (2007); Kanter (1999); Rimal and Real (2003); Rothman (2000); and Vlek (2000).

Kanter, (1999) in his study of organisational innovation through public-private partnership (PPP), concluded that to maintain successful long-term change within organisations, a commitment to change is required, which results in long-term benefits such as job creation in poor communities and high-quality financial services for disadvantaged minorities.

Similarly, in his study of the long-term effects of behaviour-change intervention strategies, Rothman (2000) argues that maintaining behaviour depends on perceived satisfaction with the resultant outcomes. Adopting a new behaviour and embedding it as a habit requires repeated assessment of



satisfaction levels; individuals within a group also need to know the benefits attached to the change.

He concluded that:

given that the repeated application of intervention strategies that facilitate short-term success does little to improve rates of long-term success, the premise that there are important differences in the psychological processes that govern behavioural initiation and maintenance appears worthy of consideration (2000, p. 65).

Rimal and Real's (2003) study involved 353 undergraduate students from Texas A & M University in assessing perceived norms. The students were given a computer-based task and asked questions related to smoking and drinking habits. The findings showed that individuals do not simply change their behaviour by mimicking others; rather, they assess the benefits before making decisions.

A study of sustainable tourist behaviour by Budeanu (2007) indicates one of the factors that influence pro-environmental tourist before finalising their holiday is knowing about the sustainable activities that they can carry out at the destination. The study concludes that tourists who have strong pro-environmental belief are identified as willing to change their behaviour while booking holidays if they register a clear intention to benefit the destination. That is; if the destination involves activities such as voluntary holidays, Eco-Tours, the sustainable tourist intends to book these types of holiday destination over those without pro-environmental activities. This is in line with the Groot and Steg (2007) study discussed above on testing the TPB framework with a questionnaire about people's intention to use a park-and-ride facility. Whereby, the result indicates that having an advantage or benefits in using the facility is identified as one of the key factors resulting in the differences of people's intention.

Maintaining change is directly linked to the satisfaction level and benefits attained from the newly-formed behaviour, which is assessed by regular monitoring. Thus, behavioural maintenance, involving measuring and monitoring as variables, is identified as an important category in maintenance of re-use behaviour. Nonetheless, measuring and monitoring can only occur when there is an action to measure, so behavioural maintenance is dependent on engagement/action.

In the empirical study, any data and studies showing evidence of measuring and monitoring is assigned to the behavioural maintenance category, which is represented with its variables in Figure 3 below.

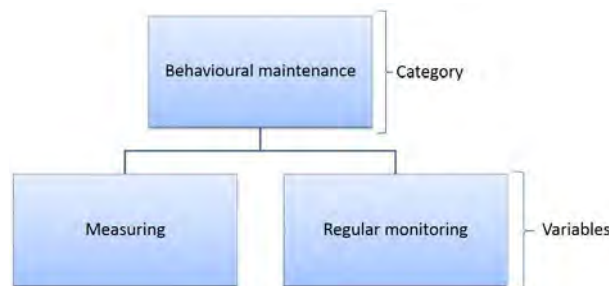


Figure 3: Behavioural maintenance, formed by sorting and grouping the upper and lower level categories

1 The communication, engagement/action, and behavioural maintenance categories, when applied  
2 together, can be used for instigating behaviour change and its maintenance. Nevertheless, a critical  
3 barrier to transforming changed behaviour into a norm, which was identified in the literature review of  
4 the key pro-environmental frameworks (Section 3.3.1 above), is the gap between the willingness to  
5 act and the actual behavioural change: the value action gap.  
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7  
8 It is important to acknowledge that there can be instances where behaviour does not change, as there  
9 may still be a gap between intention and actual behaviour. Therefore, minimising the value action gap  
10 is another main category of the framework.  
11

#### 12 13 14 **5.4 Avoidance of the value action gap (A)** 15

16 The following behaviour studies pertain to avoidance of the value action gap as a crucial category in  
17 avoiding the barriers to promoting and maintaining behaviour change within individuals, groups or  
18 organisations: Berkowitz (2004); Kaiser *et al.* (2010); Kollmuss and Agyeman (2002); Pickett-Baker  
19 and Ozaki (2008); Prendergrast *et al.* (2008); Prentice and Miller (1996); and Thaler and Sunstein  
20 (2009).  
21

22 In their study of the influence of marketing on consumer purchase decisions, Pickett-Baker and Ozaki  
23 (2008) argue that the value action gap is a phenomenon that tends to develop due to misperceptions.  
24 According to them, the value action gap is the difference between beliefs and actual behaviours. They  
25 illustrate this with the example that 'an individual concerned about the environment does not  
26 necessarily behave in a green way in general, or in their purchasing' (2008, p. 282).  
27

28 In Section 3.3.1 above, we saw that Kollmuss and Agyeman (2002) concluded that the value action  
29 gap is a common cause of failure in pro-environmental behaviour models. They imply that many such  
30 models fail to take individual, social, cultural, and economic constraints into account. This is because  
31 the models assume that humans are rational beings, who make systematic use of information  
32 provided, whereas, in reality, this may not be the case.  
33

34 Kaiser *et al.* (2010) conducted a study of an inconsistency between attitude and behaviour, whereby  
35 they illustrate that the discrepancy between verbal evaluations and actual behaviour is the cause of  
36 several difficulties. Therefore, they concluded that avoiding misperceptions or the value action gap  
37 needs to be considered when applying behaviour change studies to real-life practices.  
38

39 In his study of social norms, Berkowitz (2004) also found that a gap can occur between perceived and  
40 actual norms, leading to a misperception. Thus, he argues that 'it is extremely important to determine  
41 the most salient and relevant influences on the target group before designing an intervention to make  
42 sure that the norms being corrected are influential' (2004, p. 21). Nonetheless, Berkowitz indicates  
43 that clear communication, and facilitating engagement could potentially avoid the value action gap. He  
44 explains that because of the lack of clear communication and action on that communication, so-called  
45 'pluralistic ignorance' gets developed. Pluralistic ignorance is 'when a majority of individuals falsely  
46 assumes that most of their peers behave or think differently... [about something]...when in fact their  
47 attitudes or behaviours are similar' (2004, p. 7).  
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Pluralistic ignorance is also discussed by Thaler and Sunstein (2009) in their book, *Nudge*. They claim that pluralistic ignorance is a persistent problem in many social practices that must be considered during the behaviour change investigation.

Prendergrast *et al.* (2008) indicate that if a communicative message is complex, and if there are limitations in an individual's cognitive processes, this could lead to pluralistic ignorance, further contributing to the value action gap. Nonetheless, Prentice and Miller's (1996) study of pluralistic ignorance suggests that to avoid the value action gap, the social norm of changing behaviour must be influential enough to prevent people from being swayed by their private thoughts and opinions. They further argue that social perception is mostly guided by observation; a strong message, therefore, has the power to correct pluralistic ignorance by communicating facts and knowledge to a wider group, thereby shaping that group's attitudes and behaviour. Prendergrast *et al.* (2008) likewise argue that a powerful and simple message takes individual variability into consideration and therefore acts as an internal drive to avoid the value action gap within a group.

These studies suggest that understanding individual, social, cultural, and economic circumstances, communicating an influential message explicitly and clearly, and engaging or acting upon behaviour are crucial strategies for avoiding the value action gap.

In the empirical study, any data and studies showing evidence of communication, engagement/action, and diversity/CSR, that is social, cultural, and economic circumstances, are assigned to the 'avoidance of the value action gap' category. This facilitates analysis of the factors and barriers organisations face in achieving re-use as a normal activity. Nonetheless, although for the purpose of this study, these variables are represented separately in Figure 4 below, in real-life situations, investigating the factors that can help to avoid the value action gap is much more complex. This is because of the inter-dependency and connectivity among the categories and variables, which will take social, economic, cultural, and technological factors into consideration during the investigation.

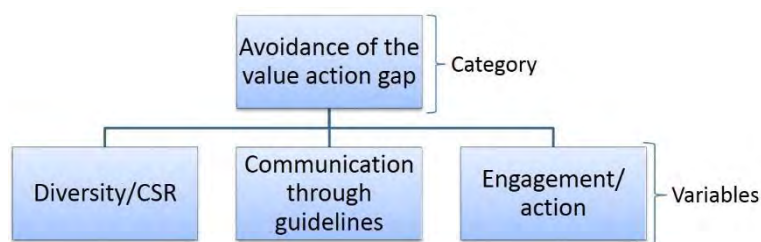


Figure 4: Avoidance of the value action gap, formed by sorting and grouping the upper and lower level categories

## 6 Conclusion and Future Study

It is not enough to simply acquire a new set of beliefs around a principle (such as to re-use). The acceptance of a new value system, leading to decisive and sustained action, requires support and reinforcement of the behaviour, via a variety of means, as illustrated above.

Figure 5 below presents a schematic diagram of the successive pro-environmental framework, which has been developed in this paper using snowballing and the inductive method to select and analyse pro-environmental behaviour studies.

Figure 5 shows communication, engagement/action, behavioural maintenance, and avoidance of the value action gap as the key categories that will be used for investigating re-use behaviour at the organisational level. This successive pro-environmental framework is called 'CEBA'.

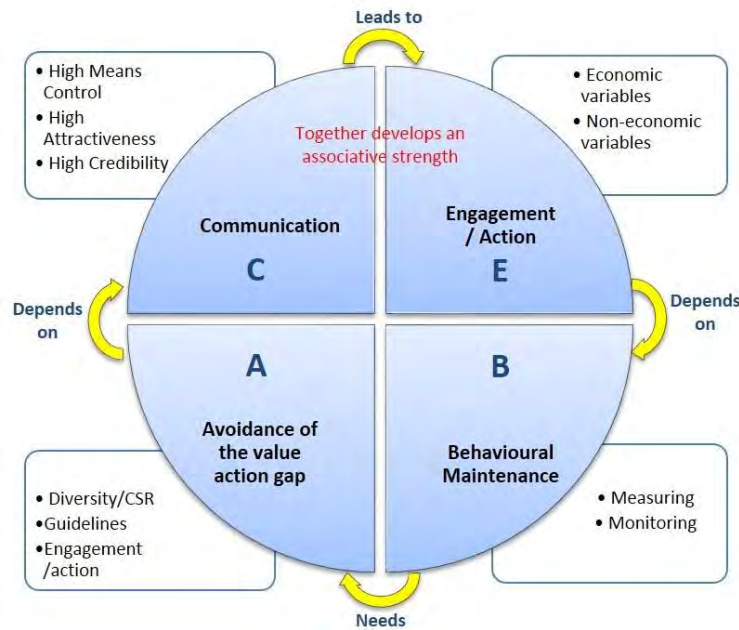


Figure 5: The successive pro-environmental framework (CEBA)

Figure 5 also illustrates how the categories and variables forming the successive pro-environmental framework (CEBA) are interconnected and dependent upon one another.

Firstly, within the category of communication, the variables essential for investigating established normative messages are high means control (mandatory rules and regulations), high attractiveness (feedback and peer pressure), and high credibility (knowledge, information, facts and beliefs).

Secondly, within the engagement/action category, the identified variables essential for investigating factors facilitating the transformation of normative messages into action, in turn enabling development of associative strength, are economic variables (availability of resources) and non-economic variables (social context, situational norm and salient environment).

Thirdly, the behavioural maintenance category enables investigation of the factors that establish a link between a goal and action.

Finally, the category 'avoidance of the value action gap' identifies the mechanisms which are indispensable for avoiding the barriers to encouraging and maintaining behavioural change (misperceptions and pluralistic ignorance).

Investigating re-use behaviour and evaluating the factors facilitating its maintenance is only feasible when each category and its variables is acknowledged and strategically accounted for when applying

the framework to real-life situations. This is because the categories and variables are interdependent. Therefore, the unavailability of a single category or variable, or the breaking of a single link, can act as a barrier to behaviour change and its maintenance. Depending on the social context, type of organisation, and the type of re-use materials each organisation specialises in, some links (categories and variables) may be more important than others and thus more critical if they are broken.

This successive pro-environmental framework - CEBA - is tested against empirical evidence both as part of the research and in real life scenario with a third sector organisation named The Selby Trust. The former has received recognition from the academic audience through conference presentations (Purohit *et al.*, 2015; Tavri *et al.*, 2014a; Tavri *et al.*, 2014b; Tavri *et al.*, 2015b). The latter, that is; the case study with The Selby Trust was conducted as part of a bursary project, which is published in an academic journal (Tavri *et al.*, 2015a). The finding indicates that CEBA acted as a useful analytical tool in the investigation of the mechanisms and barriers of re-use at the organisational level. It is recommended that the framework can be considered in future pro-environmental behaviour investigations to assess and test its viability for other more extensive areas of environmental behaviour studies.

## 7 Limitations

The successive pro-environmental framework (CEBA) can be viewed as being in the nascent stages, and thus relatively open for further development given that it has only been tested as part of a single research investigation. Nonetheless, since CEBA has been applied in a research for the first time, the findings suggest that CEBA acts as a useful and robust analytical tool to carry out pro-environmental (re-use) behaviour investigations. Furthermore, it is anticipated that the knowledge gathered from this research can be assessed for its applicability in real-life re-use practice.

Because this thesis represents preliminary forays into the applicability of CEBA, both from a theoretical and an empirical viewpoint, it naturally possesses the limitations mentioned above. However, as one of the very few studies in this area, it is believed that the findings create substantial opportunities for further research and study of the implications of approaches to waste management in real-life situations.

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