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Nurturing Eco-centric Behaviour on Campus

Barriers and Motivators

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Abstract—**In recent years, climate change and its impacts have taken centre-stage in the media as well as academic research. This has led to better awareness of the sustainability issue among the general public. However, studies have also shown that head knowledge is not necessarily matched by actual sustainable practice. The community plays an important role to effect lasting changes towards a more eco-centric behaviour. While research on this topic has been undertaken by various disciplines such as marketing and psychology, these have been done in isolation. The purpose of this paper is to draw together the knowledge from these well-established disciplines and identify the barriers and motivators to eco-centric behaviour. From here, a Six-P framework for nurturing eco-centric behaviours is developed. To illustrate the application of this framework, strategies adopted by green campus communities that reflect the Six-P framework are presented.**

Keywords: Eco-Centric, Behaviour, Barriers, Motivators, Campus, Green

1. INTRODUCTION

Over the past decades, climate change scientists have warned of global warming and its catastrophic impact on planet earth and its inhabitants. The mounting evidence led to the start of the global climate change negotiations under the UN Framework Convention on Climate Change (UNFCCC) in 1990 and eventually the adoption of the Kyoto Protocol in 1997. Sustainable development is today a cornerstone of many political agendas. However, the advancement of measures to tackle climate change is not without controversy or its skeptics. At the other end of the sustainability debate, the anti-climate change view also appears to be gathering momentum. 31,000 American scientists have signed an online petition (www.oism.org/pproject/) to dispute the global warming view while others have called it "climategate". On the local front, Professor Ian Plimer has recently published a book Heaven and Earth – Global Warming: The Missing Science (2009) that criticised the popular view as an irrational environmental movement motivated and prejudiced by research funding. Notwithstanding the arguments and evidence produced by both camps, the fact remains that the world is enjoying an unprecedented access to material possessions and comfort. The industrial revolution has opened the floodgate to mass manufacturing and production resulting in an insatiable appetite for natural resources. What remains clear is that the wanton consumption of the natural resources is generating a waste disposal and management problem that is both injurious to our health and safety and not sustainable. Therefore, regardless of the evidence or non-evidence of climate change, we should aim to be better stewards of our natural resources. Living lightly is a goal that is both necessary and desirable.

While the world leaders gathered together in Copenhagen in 2009 to reach an 'agreed outcome' on tackling climate change, this did not happen. The next Conference of the Parties (COP) will be in Mexico in December 2010 and many are hoping for the negotiations to end there. To date, much of the effort in this direction has been top-down driven and understandably so given that the world is now one big global village. Eventually, the policies and programmes developed hope to change the consumption patterns of businesses and the communities. To the extent that awareness level of the green issue has been communicated to the man on the street, this has been very successful – thanks to the modern 24/7 media and technology. Majority of people know and are aware of the need to be environmentally sensitive. However, consider these findings published in DEFRA (2005): a) 30% of people claim to care about companies' environmental and social record; but only 3% reflect this in their purchases; b) Whilst 90% of people know that drink cans may be recycled, only 50% say they have actually done so. It appears then that mere head knowledge will not change our current consumption practices, which are less than environmentally friendly.

While a survey showed that 60% of people think that global warming would be best tackled on a global level (www.dft.gov.uk), the role of the community in effecting eco-centric behaviour changes cannot be under-estimated. Professor Tim Jackson from the University of Surrey noted that 'negotiating change is best pursued at the level of groups and communities. Social support is particularly vital in breaking habits, and in devising social norms and more sustainable patterns of consumption' (DEFRA, 2005). To this end, the UK government has initiated a new Community Action 2020 – Together We Can programme to support communities in their efforts to move towards sustainable living. Similarly, the Built Environment Industry Innovation Council (BEIIC) has been set up under the Australian Federal Government Innovation Industry Councils initiative to consider innovative challenges like climate change and sustainability. Within the BEIIC's 2009-2014 Strategic Plan, a key proposal is to develop a community engagement strategy to promote sustainable practices (www.innovation.gov.au/Section/industry/Pages/BuiltEnvironmentIndustryInnovationCouncil.aspx).

However, attitude and behaviour change is a difficult and complex subject. To close the attitude-behaviour gap requires more than a bombardment of information. To

this end, this topic has been widely researched in many disciplines, including psychology, marketing, sociology, environmental studies, built environment, *etc*. However, the rich knowledge in this topic has been accumulating in silos. The purpose of this paper is therefore to draw together the findings from these disciplines and develop a framework for nurturing eco-centric behaviour at the community level. Eco-centric behaviour is defined as sustained actions centred on minimising harm to the ecological system. The paper is focused on university communities for two reasons. First, universities being generators of cutting edge research can be expected to be at the forefront of new and innovative sustainable practices and provide lessons (both successes and failures) that other communities can potentially learn from. Second, the demographic diversity within the university community is vast and varied. Consequently, it provides a good test bed for isolating strategies that may be needed among the different demographic groups.

The paper is divided into five sections. The first section provides the backdrop for purpose of this study. Following this, the existing models of nurturing eco-centric behaviours will be reviewed and a different approach to understanding the environment-behaviour conundrum is proposed. Next, the paper identifies the barriers and motivations to sustainable practices and through this, a framework for nurturing eco-centric behaviours is developed. This is followed by examples of strategies adopted by green campus communities that reflect the Six-P Eco-centric Behaviour Framework before the concluding remarks at the end.

2. EXISTING BEHAVIOUR MODIFICATION MODELS

As behavioural modification falls in the core domain of the psychology discipline, many models developed to steer consumer behaviour towards environmental sustainability target psychological aspects of consumer decision-making. For example, the *reasoned action paradigm* (Kaiser *et al.*, 1999), the *norm-activation model* (Thorgersen, 1999), the value/*belief-attitude-immediate sequence-behaviour* school (Scott & Jobber, 2000) and the *awareness-information-decision-action* model (Barr, 2003). Although these theoretical models may vary in their names and descriptions, they share a common conceptual foundation, *i.e.,* environmentally sensitive behaviour starts with individuals having an understanding of the consequences of their behaviours (knowledge). This then affects their attitudes about the environment leading to behaviours congruous with the sustainability agenda. To this end, most programmes promoting sustainable behaviour have featured information-intensive campaigns to enhance the environmental knowledge of its target audience. Yet, studies have shown that this has little impact on changing behaviour (*e.g.,* McKenzie-Mohr, 2000). Further, empirical attempts to establish a clear causal pathway from knowledge, attitude to environmentally sensitive behaviour have yielded ambiguous results (Ngo *et al.*, 2009). This suggests that there may be other contributing factors in addition to knowledge and attitude.

Bohler *et al.* (2006) noted that previous models have assumed that environmental attitudes and knowledge override essential consumer needs. Similarly, Hensher (2006) and Kennedy (2002) found that consumer decisions tend to be influenced mostly by purse-string resources and reasoning rather than environmental knowledge and attitudes. In this regard, the classical model of Olander & Thogersen (1995) appears to be well placed by including consumer need factors. In their model, behaviour modifications is organised into *motivation-ability-opportunity-behaviour.* Motivation includes both attitudes and social norms in relation to environmentally responsible behaviours. Ability refers to the habits and task knowledge of the individual whereas opportunity includes access to products and services as well as convenience. This model is underpinned by assumptions from both the *positivist* and *interpretive* paradigms.

According to the positivist view, individuals are 'rational actors, who act systematically according to their values and base their choices on expert environmental information' (Salmela & Varho, 2006). Consumers as simply economically rational beings who translate their needs and core values into a series of duplicate or equivalent decisions in their (non)purchase of green products and services (McDonald *et al.*, 2009). In other words, the green consumer is driven by intrinsic factor (value) and will always choose to buy green regardless of the context and the type of goods and services. On the other end of the spectrum, the interpretive paradigm (Schaefer & Crane, 2005) regards consumers as cultural and social agents who are engaged in consumption patterns that communicate their personal identity, status and identification with groups and values to other consumers (Dolan, 2002). As such, whether the product is green or not is less of a concern than what the purchase of that product will communicate in regard to their image and status.

Subscribing solely to either view presents difficulty. If the positivist paradigm is correct, this means that behaviour modification is not necessary as the consumer is driven by intrinsic value factor alone. Therefore, a green consumer 'once green will always remain green' and vice versa for non-green consumers. Research findings clearly dispute this view. McDonald *et al.* (2009) argued that green consumption is neither consistent nor coherent. Their study findings suggest that the same green consumer will not use the same information sources or decision-making criteria, consider the same options or focus on the same industry actors, for products in different sectors. Similarly, Dolnicar & Grun (2010) suggested that heterogeneity of behaviour exists in consumer decision-making in regard to purchasing green products and services.

On the other hand, adopting the interpretive paradigm alone to develop a behaviour modification model is also problematic. This view implies that there is no such thing as a green consumer as the behaviour is too fluid and unpredictable given the many external factors such as industrial, political and social structures acting upon the consumer decision-making psyche. Striking a middle ground, Peattie (1999) suggested that instead of studying an individual's consumption as something that forms a coherent whole, their consumption should be viewed as a stream of individual purchases, which might not be

consistent between purchase types or even for the same purchase over time.

In summary, the above discussion has shown that psychological factors alone are insufficient to modify behaviour. Consumer needs and constraints such as finance availability and image are also important considerations. Further, sequential causal models are too narrow in its understanding green behaviour. First of all, there are many variables influencing green behaviour. Second, the importance of variables that influence consumer decision-making may differ with the different types of green products and services. Consequently, a different approach to understanding green behaviour may be required. McKenzie-Mohr (2000) suggests that a community-based social marketing approach based on the identification of barriers and motivations to design a strategy is an effective alternative to conventional approaches in fostering sustainable behaviour. This approach is favoured because it is consumer-centred and broad enough to allow for a degree of heterogeneity in the conception of green behaviour. The following discussion will synthesise the findings from literature to identify the motivations and barriers to nurturing eco-centric behaviours.

3. BARRIERS AND MOTIVATIONS TO NURTURING ECO-CENTRIC BEHAVIOURS

Motivation is a concept that has captured the fascination of many management, psychology and sociology researchers. Whilst there are models and theories galore in this regard, an agreed definition of it still proves elusive (Reber, 1985). Nonetheless, Pearce (1993) made an attempt and defined it as a set of forces; either weak or strong that initiates, directs and sustains a particular behaviour. If motivation can be seen as a positive force pushing an individual towards certain behaviour, barriers can be conceived as negative forces that cause one to hold back or move away from engaging in a specific activity.

According to McKenzie-Mohr (2000), barriers can be categorised as structural or non-structural. Structural barriers are external to the consumer and can refer to societal barriers such as absence of a convenient public transportation system. On the other hand, non-structural barriers are internal to an individual (*e.g.,* lack of knowledge of how to participate in backyard composting). Where the barrier is non-structural (internal), McKenzie-Mohr (2000) noted that commitment and prompts are two useful methods to foster behaviour change. Commitment is the "foot-in-the-door" strategy whereby behaviour change is incremental by getting the individual to agree to a small change, which will then increase the likelihood of more substantial behaviour change. There has been some evidence of success using this method to overcome non-structural barriers (*e.g.,* Katzev & Wang, 1994). Additionally, prompts are also useful in tackling non-structural barriers. A prompt is a visual or an auditory aid, which reminds people to carry out an activity that they might otherwise forget (McKenzie-Mohr and Smith, 1999).

However, nurturing eco-centric behaviour becomes more complex when the barriers are structural or when multiple barriers (a combination of both structural and non-structural barriers). Not only does it imply the need for a more comprehensive strategy, multiple barriers may be activity or community specific (Oskamp, 1995). In this regard, managers attempting to create successful behaviour-change strategies will need to undertake additional research to determine the dominant barriers and implement a programme to remove them. Existing research supports the view of multiple barriers when it comes to nurturing eco-centric behaviours. Elmualim *et al.* (2010) undertook a survey of facilities managers and found that time constraints, lack of knowledge and lack of senior management commitment are the main barriers for the implementation of consistent and comprehensive sustainable facilities management policy and practice.

In regard to motivators of eco-centric behaviour, the green marketing literature is useful in informing what drives consumer towards purchasing or adopting a more environmentally sensitive behaviour. Ottman *et al.* (2006) argued that 'green products and services must satisfy two objectives: improved environmental quality and customer satisfaction. Misjudging either or over emphasising the former at the expense of the latter can be termed '*green marketing myopia'*. In other words, just informing consumers about the importance of being eco-centric is unlikely to change existing habit towards green practice. Knowledge coupled with a consumer need approach is needed for effecting behaviour modification. Many green products have failed because of green marketing myopia – managers' myopic focus on the 'greenness' of their product/service over the broader expectations of their target consumers or community. Sometimes, consumers who buy green do so not necessarily for environmental reasons. To this end, consumer value positioning is vital to the success of green products/services, *i.e.,* understanding what consumers value and positioning the product/service to address these needs. Ottman *et al.* (2006) in their study reviewed successful green products and concluded that there are at least five desirable benefits: efficiency and cost effectiveness, health and safety, performance, symbolism and status as well as convenience. The following is a brief description of each of these values that consumer look for in green products:

3.1. Efficiency and Cost Effectiveness

One of the biggest selling points of green products is its potential energy and resource efficiency. While the initial purchase price may be higher, long-term operational cost savings can convince consumers to buy green. In the light of increasing energy and resource prices, this provides a strong reason to purchase green.

3.2. Health and Safety

Given the many reports on sick building syndrome and its direct impact on occupants, health and safety is an important choice consideration. Sick buildings with poor indoor air quality has been linked to headaches, eye, nose, and throat irritation, dizziness and fatigue among occupants. The elderly, children and pregnant women are particularly vulnerable to fumes from paints, carpet and other decor in poorly ventilated buildings.

Many products are now available that reduce indoor air pollution.

3.3. Performance

This refers to the performance of the core attribute of a product. For example, consumers expect washing machines to deliver a clean yet gentle wash. Traditionally, green products while more environmentally friendly do not work as well. This is the perception legacy from first generation green products. Today, many green products are not just more energy efficient but may perform as well as if not better than non-green products (*e.g.,* green front-loading washing machine *vs* top-loading washing machines).

3.4. Symbolism and Status

This is to position green products as status symbols. Rather than having green product perceived to be only for ''tree huggers'', *i.e.,* strong green supporter; they are today marketed to appeal to the broader segment of consumers. Toyota's gas and electric hybrid car, the Prius has been marketed to represent 'green chic'. Research has also shown that consumers respond to social pressure and hence would like to be seen as supporting a good social cause, *i.e.,* the feel good factor.

3.5. Convenience

For many consumers today, time is the only true luxury. In a time-poor society, convenience thus plays an immense role in influencing consumer's choice of product. Green products that help save time are well placed for market growth. Such is the case of solar powered outdoor evening lights that recharge automatically in the day and thus eliminate the need for electrical hook-up. It also offers flexibility for reconfiguration.

The discussion in the preceding Sections 2.0 and 3.0 reviewed existing behaviour-modification models as well as identified barriers and motivators to foster more sustainable practice. While these conceptual and empirical studies yielded rich insights into nurturing eco-centric behaviours, a closer examination suggests that there are clear areas of overlap. Synthesising these findings, a Six-P framework is developed. This framework identifies the factors (both intrinsic and extrinsic) that would encourage environmentally sensitive behaviours among communities. The framework is useful in that it would serve as the foundation upon which managers can base further research to identify the dominant factors that drive or deter eco-centric behaviours in their community. The preceding discussion has also highlighted the heterogeneity issue in which the barriers and motivations for choosing sustainable practice differ for each community. In this regard, this framework is intentionally kept generic and does not seek to provide any causal links between the six variables identified.
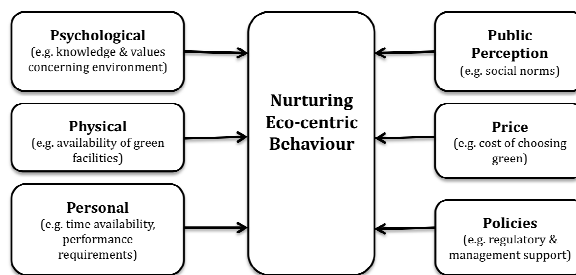
Figure 1 explains this framework diagrammatically.

Figure 1.   Six-P framework for nurturing eco-centric behaviours.

4. POTENTIAL APPLICATION OF THE 6-P FRAMEWORK FOR UNIVERSITIES

Having developed a holistic framework for nurturing eco-centric behaviour, the paper now applies the 6-P framework to university campuses by looking at sustainability initiatives within Australian and Overseas universities. Some of the materials for this section of paper have been drawn from a previous paper the authors wrote on identifying key principles for campus sustainability (Bajracharya & Too, 2009) as well as review of websites and annual reports of universities on their sustainability initiatives.

4.1. Psychological

Knowledge about environmental issues will affect the attitude and behaviour toward the environment. To this end, education is an important component in creating better awareness of the environmental consequences of non-sustainable behaviour and development. Universities can play an important role in enhancing the knowledge, attitude and behaviour of its students and staff.

One of the ways to positively change the attitude and behaviour of campus community could be through demonstration projects and active involvement of students in university wide grass roots sustainability projects. These types of projects involving the general campus community are critical in developing a culture of sustainability. Cornell University has taken such initiatives by hosting a range of campus groups such as the Kyoto Task Team and the Green Purchasing Task Force to build partnerships for sustainability (Cornell University, 2008). Cornell's Sustainability Hub – a student organization has played a pivotal role in actively educating student community as well as positively changing the attitude and behaviour of the students by encouraging them to collaborate on a range of sustainability projects. Likewise, Australian National University (ANU)'s initiative called Social Environmental and Economic Sustainability at Work (SEE S@W) is a grassroots project that aims to deliver measurable reductions of the University's ecological footprint within offices, labs and residential halls and colleges. 'Green Reps' are trained to support organisational change towards sustainability in their departments and offices. ANU has built the capacity of staff/students to be catalysts and motivators for change in their area.

Another way to improve the eco-centric behaviour among students is to integrate sustainability in teaching and research. A growing number of universities have

given emphasis on integrating sustainability into the degree program coursework and research. For example, University of California, Berkeley conducts innovative research on sustainable technology and practices and emphasises the importance of increasing awareness of these values through instruction and example. Likewise, Australian National University has integrated sustainability into the degree programs by offering courses ranging from Greenhouse Science to Corporate Sustainability to Human Ecology.

4.2. Physical

The motivations for eco-centric behaviour can also depend on the availability of green facilities within the campus. For example, in Bond University, the new building for Mirvac School of Sustainable development is the first six-star educational building in Australia. Some of the sustainability features in the building are the extensive use of natural lighting and ventilation, energy efficient appliances/devices, ecologically designed storm water and waste water treatment and building management system to monitor usage of energy, water and wastewater. The amount of water being used, the CO2 emissions and the amount of power self-generated are monitored and benchmarked against outputs for normal buildings as a measure of operational performance. Consequently, energy and water savings are made more visible leading to a greater sensitivity to the conservation of natural resource.

The Mirvac School of Sustainable Development building is a sustainability flagship for Bond University. In this regard, sustainable development at Bond University has been given a strong kick-start. However, having just one 6 star green rated building in the campus is only a beginning. There needs to be concerted efforts in making other buildings within the campus sustainable as well.

4.3. Personal

Personal motivations for sustainability behaviour are also dependant on factors such as time availability and performance. Regarding time availability, a relevant case is the use of public transport by students and staff of the Universities. If the public transport is unreliable and infrequent, students and staff are forced to depend on private use of cars.

The "*State of the Campus Environment*" report from the US highlighted that many universities have poor access to public transport and that transport was one of the weaker links in campus sustainability (McIntosh, Cacciola, Clermont & Keniry, 2001). The study found that while the most popular transport strategy was found to be providing bikes, there have been few initiatives to reduce single occupant vehicles such as discounted bus passes, carpooling programs and emergency ride home programs in the Universities

An integral part of becoming a sustainable campus is the development of specific plans to promote sustainable modes of transport. Departments in ANU use Timely Tredlies bicycles for transport around campus (ANU, 2008). With over 60 bikes covering more than 50,000 km per year, Timely Tredlies is the largest bike fleet of its kind in Australia. Timely Tredlies have been promoted as a fast way to travel that not only reduces environmental impacts but also improve physical wellbeing. University of Florida's campus sustainability committee raised parking charges to discourage car use and promote public transport. Cornell University's action plan for Transport gives all new students free transit for the first year to encourage public transit use and change their behaviour from early on.

4.4. Public Perception

Public perception can act as motivator or barrier to eco-centric behaviour in campus. In Bond University, the Mirvac School of Sustainable Development being the first six star green educational building in Australia has the prestige and status factor which can act as a motivator for enviro-centric behaviour among its occupants. The social pressure factor may also inhibit non-environmentally sensitive actions. This facility serves as an educational tool in driving home the message the importance of sustainable development to students and visitors alike. It allows high school students and visitors to experience first-hand the sustainable features of the building and how it can advance the goal of sustainability.

4.5. Price

For many universities, the commitment to sustainability has meant change in purchasing system. Rather than merely focusing on cheaper price alone, the emphasis here is on buying local, recycling, healthy living and life cycle costs. Universities such as University of California Berkeley, University of Florida, and Oxford Brookes University are committed to increase their purchase of organic food for campus cafeterias and dining. At the same time, the impact on environment is also minimised through identifying local green products and suppliers and procuring these services and products for the University. University of Oxford has a policy of sustainable purchasing by increased use of sustainable products and products that can be recycled after use. University of California Berkeley has a policy of purchasing environmentally preferable products, minimising use of toxic substances and handling wastes responsibly. .

Within Universities, there may be difference in the way price may act as motivator and barrier to sustainable behaviour. It is possible that the price factor may play more important role among students compared to staff who may be guided by other factors as long term savings, convenience, personal identity and status.

4.6. Policies

In order to nurture eco-centric behaviour in campuses, it is important that the universities have a strong commitment to sustainability through strong management support. Governance framework plays an important role in acting as a barrier or opportunity to effectively present the sustainability agenda. Many universities have established governance frameworks to develop and implement sustainability action plans. For example, the University of California, Berkeley (UCB) has an Office of Sustainability to regularly measure and report overall progress towards its aim of a sustainable campus. Additionally, there is also a Chancellor's

Advisory Committee on Sustainability to give strategic guidance to the Office of Sustainability. Locally, the Australian National University has a University's environmental management office called ANUGreen that is part of the Facilities and Services Division. Through the ANUGreen office, ongoing collaboration on sustainability across departments is encouraged and supported through financial backing and long-term corporate commitments.

A number of universities have signed up to the Talloires Declaration with a commitment to sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities (to date, this declaration has been signed by over 350 university presidents and chancellors in over 40 countries). For example, University of California, Berkeley has a Statement of Commitment to the Environment where it is stated that the students, faculty and staff are committed to taking a leadership role as responsible stewards of the physical environment and using educational and research activities to promote environmental awareness, global thinking and local action.

In the "Campus Environmental Survey" of 59 Universities in the US that signed the Talloires Declaration, several interesting findings were reported (Sriberg & Tallent, 2003). First, the report found that campuses have done very well in conventional operational measures such as recycling but have been reluctant to implement tougher initiatives such as buying renewable energy and promoting alternative transport. Second, the vast majority of campuses have piecemeal and uncoordinated efforts lacking campus-wide environmental policies. Third, the study also confirmed the importance of collaboration across different disciplines and functional units to make progress on sustainability which otherwise is hard to achieve in bureaucratic and hierarchical structures, common among many universities. Finally, governance framework plays an important role in acting as a barrier or opportunity to effectively present the sustainability agenda to campus stakeholders. Signing the Talloires declaration on its own is neither a valid indicator of an institution's commitment to sustainability nor an organisational change strategy for sustainability (Sriberg & Tallent, 2003).

Many universities have taken active role in reporting the progress of their sustainability initiatives in their annual reports and websites so that the university and wider community can see the improvements made over the years. For example, ANU's annual report shows the reductions made in Co2 emissions, water use, waste to landfill, under three scenarios – business as usual approach, target and achievement for each of the last five years. This is a powerful way to disseminate information to the general public and gaining support from them for these initiatives.

5. CONCLUSION

This paper has developed the 6-P framework for eco-centric behaviour and applied it to university campuses. The application of framework helps identify the barriers and motivators to sustainable practices in campuses. The lack of physical facilities such as good public transport can act as a barrier to eco-centric behaviour within campus community. Price of products can also be a constraint for students to engage in sustainable behaviour. There is a strong role of university senior management and governance frameworks for motivating students and staff to eco-centric practices. The presence of green buildings/facilities within campus can also act as motivator for environmentally friendly behaviour. The sustainability initiatives in universities indicate that both structural (such as presence of good public transport) and non-structural factors (such as knowledge, attitude of individuals) need to be considered in the facilities management of campuses. Senior management commitment to implementation of sustainable facilities management is crucial to act as motivators for grass roots initiatives on sustainability. Clearly the application of the framework demonstrates the need to understand multiple theoretical frameworks from different disciplines such as psychology, green marketing, and sociology. The paper has demonstrated the benefits of this multidisciplinary framework and argues for the need of both top-down commitment and bottom-up initiatives for sustainability. Nurturing eco-centric behaviour requires paradigm shift in building sustainability culture among diverse groups of people within university campuses.

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