

Green and Sustainable – How are these terms reflected in the context of facilities management?

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ABSTRACT

Purpose: This paper evaluates how the terms ‘*Green*’ and ‘*Sustainable*’ are used in facilities management (FM) and FM relevant literature. The purpose is to develop a deeper understanding of the use of terms in new emerging products such as “green leasing” and make a contribution to terminological consistency.

Background: In sustainable development, the use of terminology is both important and a point of debate for scholars and practitioners. Owing partially to sustainability’s relatively recent position as a research topic of academic interest, in addition to a series of fragmented efforts for standardisation, this has resulted in a multitude of uses for seemingly similar terminology. This conundrum of definition is especially prevalent in facilities management (FM). In a field and industry that is increasingly striving to adopt a coherent and consistent approach to its development, agreeing on standard usage of key terminology is of the utmost importance.

Approach: Using desk research and document analysis, this paper evaluates how the terms and terminology surrounding ‘*Green*’ and ‘*Sustainable*’ are used in academic FM publications, along with relevant literature from practice. The usage of each term will be categorised using the levels of organisation management (OM) consisting of the ‘*strategic*’, ‘*tactical*’ and ‘*operational*’ levels. Findings will be discussed aiming to identify the consistencies and inconsistencies that are present in scientific and non-scientific literature in the use of terminology.

Results: The paper provides an overview and discussion into how the terms ‘green’ and ‘sustainable’ are utilised and applied in FM. The paper concludes by compiling the data found in the literature, and offers suggestions as to how these terms are used in the context of FM.

Practical implications: This paper will contribute to further developing and agreeing on standard usage of key terminology in FM along with further developing the state of the art in FM. This paper also offers scope by which to further develop the understanding of what is ‘*Green*’ and ‘*Sustainable*’.

Keywords

Sustainable facilities management, green buildings, sustainable buildings, sustainability strategy, green leasing

1. INTRODUCTION

With facilities management (FM) being recognised as an important academic discipline integrating fields of real estate development, building science, and management of property, construction and services, it is nonetheless in its early years as a bona fide discipline in the study of the sustainable development of the built environment and green buildings operation and usability. FM has been discussed as an academic discipline referring to six main criteria, and considering: its particular object of research, the body of accumulated specialist knowledge, theories and concepts, the use of specific terminologies, specific research methods, and institutional manifestation (Junghans & Olsson, 2014, p.70) . Nonetheless, FM is in its early years, with some of the earliest research done by Professor Keith Alexander in the early 1990's (Alexander, 1992). A driver of the progression and growth in FM is the implementation of new theories and business concepts, is seen in many respects to be evolving in tandem with that of sustainable development and discussions on the sustainable built environment and green buildings (Elmualim et al., 2010, p.59) . Whilst academic and practice based research and development in FM is reaching maturity, a fully-fledged definition of terms is an ongoing process, much like the change in the role and competencies of Facility Managers (FMs) themselves. The importance of terminological development and language to adjust to research objects and develop knowledge has also been noted (Junghans & Olsson, 2014, p.72).

When considering sustainable facilities management (SFM), green property services, and the need for terminological development, an understanding as to what constitutes the terms '*Green*' and constitutes '*Sustainable*' is important for both consistency in understanding, and for providing a further contribution to the body of knowledge in the field of FM. Other fields have already taken steps towards understanding a difference between both terms. From the political sciences, Yanarella et al. (2009) made an investigation looking the same terms, concluding that '*Green*' was associated with products and processes associated with "*low hanging fruit*", whilst '*Sustainability*', they imply, is more closely tied to whole systems (Yanarella et al., 2009, p.296). Until now however, the authors have not found a similar discussion in the field of FM.

This paper addresses the following research questions:

- How are the terms '*Green*' and '*Sustainable*' understood and utilised in existing FM relevant literature from journals and practice literature?
- To what extent is there a common understanding of the use of "Green" and "Sustainable"?
- How can the findings contribute to a deeper understanding of FM relevant terminology like "green leasing"?
- Does literature from journals and practice lead to a better understanding of where sustainable decisions are being made within an organisation?

These questions will be addressed using FM relevant literature from academic journals along with relevant literature from practice and environmental certifications. A look at each terms position in FM organisational management will form the analytical approach, and will be used to assess the variation in the application of the terms, as well as similarities between the

usages of both. This paper is a study on the contextual focus of the terms with regards to their positioning in organisational management levels. This also affords a ‘critical eye’ into how the usage of both terms is reflected in the decision making processes found in a formal organisational structure. The results section of this paper will present a terminological investigation addressing the existing usage and understanding of the terms ‘Green’ and ‘Sustainable’, before finally moving on to the discussion addressing the interchangeability and specificity of each term in the context of the research questions.

A Preliminary Understanding of the terms Sustainable, FM and Green

An initial understanding of what constitutes the terms FM, ‘Sustainable’ and some extent ‘Green’ is necessary for a contextual understanding of the goal of this paper. FM has been described as “*the integrated management of the workplace to enhance the performance of the organisation*” (Tay and Ooi, 2001 cited in Junghans & Olsson, 2014, p.71). With regards to FM interaction with non-core services or ‘open facilities management’, it is defined as “*integrated and coordinated design, planning and management of non-core services*” (De Toni and Nonino, 2009 cited in Junghans & Olsson, 2014, p.71). In terms of what differentiates sustainable facilities management (SFM), it could also be considered to “*include consideration not only of core business and support functions, but also relations with the local and global society as well as the climate and the eco system*” (Nielsen & Galamba, 2010, p.3). Sustainable FM can be considered a part of a growing body of research which includes: “*energy management (Wood, 2006), waste management and recycling (Pitt, 2005), transportation (Piecyk et al., 2010), carbon footprint (Wang et al., 2010), environmental responsibility and community engagement (Fraser et al., 2006), and biodiversity (Halliday, 2007) are the key sustainability issues being addressed in organisations*” (Elmualim et al. 2012, p.18). Similar terms occasionally used in literature are ‘green property services’ (Määttänen, 2014) ‘green property operations’ (Tobias et al., 2012) or ‘green property management’.

2. Research Design

This paper brings together evidence from an extensive literature search from academia, as well as FM practice and environmental certifications. The literature review approach was chosen due the cross-sectional qualities such an approach can provide, as well as determine the questions that are most pressing in this field overall (Yin, 2014, p.14). Furthermore, a review provides scope to develop the definitions of both terms further in the doctoral research of one of the authors, and illustrate “*challenging questions*” (Yin, 2014, p.39). Attempting to understand the differences between ‘Green’ and ‘Sustainable’ could be considered one such question due to the importance in research of having a common and more widely accepted definition of terms, concepts and terminology.

Literature and Sources

Literature has been sourced from books, journals and websites from the fields of FM from the early 1990’s to the present, along with other relevant fields such as property management, building design, leasing, architecture and engineering. Whilst these other fields are not considered sub categories for analysis in of themselves, they will be considered alongside literature directly from FM due to their relevance. Academic literature was sourced from Google Scholar, and came from journals and renowned conferences. The decision to use Google Scholar as a source of academic material is due to the availability of material and extensive size of their library as opposed to rival online academic paper sources such as the digital library Jstor. The literature from this search was chosen based in its conjunctive use of the search term within the first ten results pages on Google Scholar. The first ten pages was the scope barrier in order to account for the most popular uses of the terms. For practice

literature, a normal Google search was conducted, organised by ‘popularity’ and using ‘incognito’ mode on the internet browser ‘Google Chrome’ to remove a cookie based browser bias. There nonetheless however exists some bias due to geographical location. Although Google may not be considered the most scientific means to accumulate literature, it can be nonetheless considered important due its presence in the internet search engine industry from the perspective of a web presence of FM providers. The decision to use Google over other search engines such as Yahoo! is also a reflection on the popularity of Google and the related Google Scholar over their competitors. The chosen sites from this search were also based on their conjunctive terminological relevance within the first ten pages of the results. Both academia and practice searches used the conjunctive keywords searches of: ‘*facilities management green sustainable*’, ‘*sustainable green property services*’, ‘*green sustainable buildings property management*’ and ‘*facilities management sustainable green development*’, with some refinement (e.g. removing ‘golf turf management’) where necessary.

In order provide a more holistic approach to green and sustainable issues in FM, relevant technical documentation from two of the world’s foremost environmental certifications/assessment methodologies for the built environment will be investigated, using the same analytical approach as the academic and practice literature. One methodology is the British founded but globally franchised Building Research Establishment Assessment Methodology (BREEAM), which dominates the European certification market. Owing to the location of the authors, the BREEAM standard for Norway (known as BREEAM-NOR) will be the franchised documentation of choice. The National Scheme Operator (NSO) for BREEAM-NOR is the Norwegian Green Building Council (NGBC). The second certification is the United States of America (USA) centric Leadership in Energy and Environmental Design (LEED), operated by the United States Green Building Council (USGBC).

Analytical Approach

This paper will analyse the literature by looking at the extent to which each usage of the terms ‘*Green*’ and ‘*Sustainable*’ are at the organisational management (OM) levels of ‘*Strategic*’, ‘*Tactical*’ and ‘*Operational*’. This was chosen due to the organisational efficiency implied by the categories in translating sustainable agendas into “*measurable operational targets*” (Elmualim et al., 2010, p.59). This framework is also used in FM practice, and, for example, is at the heart of the EN 15221-1 standard for ‘terms and definitions’ in FM (BIFM, 2015). Atkin and Brooks (2015) provide a definition of the three management levels in an FM context. According to Atkin and Brooks the **Strategic Level** “*is largely about setting the direction for the organisation and ensuring that the means for achieving its objectives are in place*”. The **Tactical Level** is the “*organisations broad intentions to be turned into workable plans, and might call for new processes and procedures as well as changes to those that exist*”. Finally, the **Operational Level** aims to “*perform work according to laid-down procedures and not to deviate*” (Atkins and Brooks et al., 2015, pp. 46-47). The management levels will be used as a framework that will assist in a more tangible understanding of the scope of the usage of the terminology, through an approach that can be understood by academia and practice. The literature was then analysed by taking references referring directly to ‘*Green*’ and ‘*Sustainable*’ terminologically, then placing them at each of the management levels depending on their contextual placing considering the management level descriptions by Atkin and Brooks. It is hoped that this approach will further an understanding as to the organisational relevance of each term in order to better facilitate a more commonly accepted understanding of the ‘*Green*’ and ‘*Sustainable*’ in both academia and practice.

The use of organisational management as a categorising tool was also chosen due its usefulness in the categorising of the decision making processes in organisations. An understanding of the term and terminological placing of ‘*green*’ and ‘*sustainable*’ in an

organisational structure can allow for a more clear understanding as where in the ‘*strategic*’, ‘*tactical*’ and ‘*operational*’ levels of an organisation are decisions on a sustainable approach being made. The importance of correct decision making procedures in this context is already recognised in literature, where Epstein and Buhovac (2014) for example state that in order to integrate such an approach into day to day decision making there needs to be the “*combination of a clear and well-articulated and communicated sustainability strategy, senior management commitment to a broader set of objectives than profit alone, and utilising appropriate structures and systems to drive sustainability through the organisation*” (Epstein & Buhovac, 2014, pp.23-24)

The process of ‘per text’ analysis was also critical in order to understand the usage of both terms. The 25 texts chosen for analysis were read in their entirety, and it was noted how they used ‘*Green*’ and ‘*Sustainable*’ along with the contextual intention of their meaning. They were then categorised as to whether they were ‘practice’ or ‘academic’ in nature (often in relation to category of the overall text). Finally, any relevant use of the terminology was placed at one of the OM levels based upon how closely the specific reference to either term fitted the descriptions of each level noted in the previous impact. The authors were also mindful of the more directed FM specific meaning in FM literature, as well as the indirect references and relevance to FM in literature not directly on the topic. This could be in the form of literature on the likes of ‘sustainable building management’ or ‘corporate sustainable decision making’. An approach like this was necessary in order to understand the nuances in context and meaning that could be lost out outside of immediate references to FM, or even ‘*Green*’ and ‘*Sustainable*’. This analytic approach also guided the direction and process of the literature research before the analysis and discussion were formally conducted.

3. RESULTS

3.1 The Usage and Definition of ‘Green’

Academia

At the time of writing in December 2015, a Google Scholar search of ‘*Green Facilities Management*’ will generate 924,000 hits (Google, 2015a). The search does not generate results that use the search term conjunctively. Whilst many of the hits do not directly relate to FM, there are nonetheless numerous relevant documents included. Baharum *et al.* (2009) in their work on ‘green FM intellectual capital’ associate the term ‘*Green*’ as an active term in their context, associating it repeatedly in their work with the terms “strategic” and “practice” (Baharum *et al.*, 2009, p.268). Hodges (2005) used the term in a similar manner, with the word “practice” being coupled with the term ‘*Green*’ throughout the majority of his paper. Due their use of ‘practice’ in the context of energy reduction measures, this can be considered to be at the ‘*Operational level*’. That being said, he also uses the phrase “*green and sustainable*” together in much of the paper, using it 16 times out of 45 mentions of ‘*Green*’. Whilst this could imply that the author feels that both terms are broadly interchangeable, the solo usage of ‘*Green*’ is used when the terms ‘practice’ and ‘building’ are mentioned in the text. The word ‘*sustainable*’ is also often used separately in the context of practices on the ‘*Operational level*’, with 2 references of it the context of ‘sustainability strategy’. To this end, it can be considered that Hodges (2005) sees little separation between each term (Hodges, 2005). Dixon *et al.* (2014) in their work on energy management, mention FM in the context of the emerging leasing product ‘green leasing’ in the sphere of “*the extent to which they allow alterations and data sharing*” (Dixon *et al.*, 2014, p. 428). Whilst the definition of green leasing and their scope is currently not standardised (Collins and Junghans, 2015, p.135), the wording implies a focus that leads towards the ‘*Tactical level*’ in the context of data sharing.

Referring to ‘Green FM’ and its services as a conjunctive term in academic literature, Jensen *et al.* (2012) offer one of the few instances of Sustainable FM being referred to as “*Green FM*” in scholarly literature, viewing it in tandem with ‘Sustainability’ by offering a definition of ‘Green FM’ that is similar to the earlier Sustainable FM definition, mainly by associating it with the likes of energy reduction, added value and operational cost savings (Jensen, 2012, p.212), placing it at all three levels of the model. A definition as to what constitutes ‘Green Property Services’ was offered by Määttänen (2014) who described it as “*services that reduce negative impacts to the environment and human health while fulfilling the needs of the occupants and maintaining the property’s conditions and characteristics*” (Määttänen, 2014, p.2). This covers two of the OM levels, particularly the ‘Tactical’ and ‘Operational’ levels when looking at maintaining the needs of users, owners and the building itself. Another rare mention of Green FM can be found in a paper being titled ‘*End-user requirements for green facility management*’, where the term ‘Green’ is mentioned only twice, and not defined or clearly contextualised, with no mentions of the term ‘Sustainable’ outside of references (Nousiainen and Junnila, 2008).

Practice

There are numerous examples in FM practice that refer to the term ‘Green’. International law firm DLA Piper in their report entitled ‘*Green Facilities Management Contracts*’ recognise the importance of understanding that ‘Sustainable FM’ and ‘Green FM’ are both in need of clarification. They imply early in their document that both terms are used “*synonymously*” and “*environmental friendliness, economic efficiency and social compatibility are to be given equal consideration where possible*” (DLA Piper 2014, p.7). They effectively reinforce the interchangeability of both later in the report, stating that a “*Green Facility Management Agreement is usually a standard contract which has been extended by individual provisions to achieve sustainability*” (DLA Piper, 2014, p.12). This could imply DLA Piper are associating ‘Green’ with ‘Tactical level’ considerations on the grounds that it refers to a written agreement that would include requirements, and ‘Sustainable’ with more a reference to the ‘Operational level’ day to day activities of FM providers due to the ‘individual provisions’ implications. Regarding the overall report content, much of it is concerned with the contract stage of FM provision, and thus more directly placed at the ‘Tactical level’ due to such agreements requiring targets in excess of the strategic approach, yet come before day-to-day operational activities in the OM pyramid. The globally operating FM company ISS has begun to move proactively into Sustainable FM, with its first service marketed as such being that of ‘Green Cleaning’. Their promotional material describes the incentive for their clients as “*being green and supporting environmental sustainability may be at the heart of your company brand*” (ISS, 2014, p.2), and their own as “*we are proud to offer you the possibility to take your sustainability ambitions to the next level*” (ISS, 2014, p.5). Their usage of each term provides some contradiction as to what they mean by usage of ‘Green’ and ‘Sustainable’. Whilst the latter quote could imply that both are interchangeable, the first part of the citation considers ‘Green’ as being a ‘Tactical level’ term, whilst ‘Sustainability’ appearing to have a more company policy ‘Strategic’ quality to its meaning.

Environmental Certifications

The term ‘Green’ has been noted in some of the technical documentation available from the leading environmental certification associated methodologies. In the case of the BREEAM-NOR technical manual, there are 104 references to ‘Green’. Aside from reference to the NGBC, the majority of references refer to ‘Green Leasing’, as a ‘Tactical level’ means by which landlords and tenants can improve the environmental credentials of their buildings (NGBC, 2012). Beyond this, there are several mentions of a green lease alternative, that of the ‘Green Building Guide’, which is a non-legally binding document that requires tenants to

provide fit outs that uphold the BREEAM standards of the building that they occupy (NGBC, 2012, p.21), which can also be considered ‘*Tactical*’ due to be term and target related documentation. Beyond this, the only substantial mentions are of greenhouse gases. BREEAM also offer a certification called ‘BREEAM In-Use’, which deals with the operational phase of a buildings lifecycle. The international technical manual for this certification notes 33 mentions of ‘*Green*’, but have considerations on several OM levels. Their references to ‘sustainable design’ and ‘sustainable buildings’ straddle the both ‘*Strategic*’ and ‘*Tactical*’ level considerations, whilst the more numerous references to ‘green procurement’ appear to sit more comfortably at the ‘*Tactical level*’ as they describe a policy approach featuring specific targets and requirements (BREEAM, 2015). In the case of the LEED user guide, there are a total of 20 mentions of ‘*Green*’, mostly relating to non-FM relevant issues such as ‘Green vehicles’. ‘Green Cleaning’ is the only other reference to the term that is relevant for this paper, and its used almost exclusively at the ‘*Operational level*’ due to references to cleaning practises on a day to day basis (LEED, 2014). Going more in depth to FM related documentation and looking at their rating documentation on their FM relevant ‘Building Operations and Maintenance’ program, the only references beyond some patented technologies also refer solely to green cleaning (LEED, 2016).

3.2 The Usage and Definition of ‘Sustainable’

Academia

A Google Scholar search of the terms ‘Sustainable Facilities Management’ in December 2015 generates more than a million hits (Google, 2016b). After some refining of the search terms to remove the likes of ‘golf turf management’ and other irrelevant terms, it still generates 592,000 hits (Google, 2015c), although not all of them will be relevant to the intentions of the search. For the sake of clarity, the terms ‘*Sustainable*’ and ‘*Sustainability*’ will be used interchangeably as their literal meaning is virtually the same contextually.

As in the case of the term ‘*Green*’, a popular usage of these terms are also proving to be broad and illusive. Also as in the previous term, it is not difficult to narrow down relevant literature for the purposes of this paper. Valen and Olsson (2012) in their work on FM in Norwegian municipalities refer to Sustainable FM at the ‘*Operational level*’ ‘value driven maintenance’ in the context of the installation of sustainable technology (i.e. waste management, energy efficiency technologies) during the upgrade of existing buildings (Valen and Olsson, 2012, p.290, 299). Elmualim *et al.* (2010) view the metaphorical ‘jumping off point’ for ‘*Sustainability*’ being in sustainable development and thus, the ‘*Strategic level*’ (Elmualim *et al.*, 2010, p.58). Much of the article follows this theme, with only passing mentions of deeper in activities in FM, that arguably remain in the ‘*Strategic*’ due the repeated references to a “*sustainable perspective*”, and in many respects is to be considered a bona fide business strategy (Elmualim *et al.*, 2010, pp.59,60). Some of the references to ‘*Sustainable*’ and ‘*Sustainability*’ however are context based and cannot be necessarily considered concrete in definition by their respective authors. Enoma (2005) for example, exclusively refer to the term in the context of its ‘*Strategic level*’ importance. This however is due to the paper addressing the role of FM’s solely at design stage (Enoma, 2005), an aspect of context that the reader should remain aware of in many publications. There are other examples of an exclusively ‘*Strategic level*’ usage of the terms, with Haugen (2008) for example using them in the context of ‘development’ during building upgrades (Haugen, 2008).

Practice

In practice based literature, the references to ‘SFM’ and ‘Sustainable Facilities Management’ are almost non-existent. A more refined search of terms such as ‘*sustainable facilities solutions*’ and ‘*sustainable building management*’ in a Google search in December 2015

however yields some useful links. American multinational conglomerate ‘Honeywell’, in the FM and building management part of their company, incorporate ‘Sustainability’ in their website advertising literature. Their focus in this regard is mostly on energy management, with some supplementary references to “*green building operations and maintenance*” and behavioural change (Honeywell, 2016). Their references mainly refer to ‘*Strategic level*’ considerations, with arguable considerations also of the ‘*Tactical level*’ due to referrals to the likes of LEED. There is no mention of ‘*Operational level*’ considerations, most likely due to the promotional nature of the website. Examples of Sustainable FM provision can also be found on the European market, like in the case of British FM service providers Almeda. Founded in 1981, they have taken the rare step of using the term of phrase “*sustainable facilities management*” in their promotional materials. Their website not only engages ‘Sustainability’ in their companies operating philosophy, but also goes into detail in using terms such as “*soft sustainable facilities management*” and dealing with Energy Performance Certificates (EPC’s) (Almeda, 2015). To this end, it could be suggested that Almeda actively refer to all three OM levels. The globally operating construction, building management and FM company VINCI take a more holistic view toward integrating sustainability as a part of their business practises, seemingly covering all of the OM levels in a systematic way. At the ‘*Strategic level*’, they promote their sustainable business model, showing how they integrate their core business philosophies into the triple bottom line of ‘economic’, ‘environmental’ and ‘societal’ sustainability (VINCI, 2015b). At the ‘*Tactical level*’ they have their company sustainability policy that deals with issues such as whole lifecycle sustainability considerations and impact assessments (VINCI, 2015a). Finally at the ‘*Operational level*’ (within the scope of promotional literature) they promote result based key performance indicators (KPI’s) showing an 83.7% diversion of waste from landfill, and a 10.1% reduction in CO₂, amongst numerous other environmental results (VINCI, 2014, p.24).

Environmental Certifications

Referring once again to BREEAM-NOR, their technical manual offers 39 mentions of ‘Sustainable’ and ‘Sustainability’, that are presented in a variety of contexts. Good practise on sustainable design and procurement are of particular note, placing them in the ‘*Strategic*’ and ‘*Tactical*’ levels respectively. Sustainable innovation is also given substantial space, which could be considered ‘*Strategic*’ overall, but leading into ‘*Tactical*’ where context relevant. Sustainable water treatment is also given a chapter in the manual. Other notable mentions refer to the *Operationally* focused ‘sustainable performance’ and *Strategically* important ‘corporate social responsibility’ (CSR) (NGBC, 2012). In the technical documentation for BREEAM IN-USE, there are 53 references to the term. Once again the ‘*Tactical level*’ procurement and supply chain management are key focuses, but also feature the equally as ‘*Tactical*’ ‘sustainable management practises’ and the more ‘*Operationally*’ inclined ‘sustainable energy management’ (BREEAM, 2015). The demands for the ‘*Strategic level*’ CSR are also important in this documentation, noting that for owners, renters and developers, increasing the sustainability of existing building stock is a stakeholder demand that needs consideration (BREEAM, 2015, p.23). The LEED user manual has 12 mentions of the term, the majority of which refer to procurement and purchasing, with one mention once again of cleaning practises, in the form of securing sustainable cleaning equipment (LEED, 2014), placing all of the references firmly at the ‘*Tactical level*’. Their Building Operations and Maintenance documentation also features 12 references, all of which refer to less relevant ‘sustainable agriculture’, however, there is one reference to sustainable procurement (LEED, 2016). As per the section on ‘*Green*’, the environmental certification uses the terms ‘Sustainability’ and ‘Sustainable’ across all three OM levels.

4. DISCUSSION

In this section of the paper, the extent to which each of the terms ‘*Green*’ and ‘*Sustainable*’ touch on the organisational management levels of ‘*Strategy*’, ‘*Tactical*’ and ‘*Operational*’ with regards to the results sections categories of ‘*academia*’, ‘*practice*’ and ‘*environmental certifications*’ will be discussed. The implications of the results on research and practice will also be considered.

Defining and Understanding ‘Green’ and ‘Sustainable’

The discussion of the results is presented in table 1 which outlines how the literature has been used both of the terms. Each separate contextual usage of the term has been noted e.g. if a paper uses the term ‘*green*’ at the tactical level consistently throughout a paper it only counts once, however if it is used in two separate levels in the same paper it would count twice. This ensures and makes clear that each separate contextual usage was the focus of the study, and not simply the amount of times either term was mentioned.

Table 1 below outlines the degree to which each of the contextual usages of the terms ‘*Green (G)*’ and ‘*Sustainable (S)*’ are noted across the OM levels and where they feature in ‘*Academia (A)*’, ‘*Practice (P)*’ and ‘*Certification Methodologies (C)*’:

Table 1

OM Level	G-A	G-P	G-C	S-A	S-P	S-C	OM Level G Total	OM Level S Total	G + S Total
Strategic	1	1	1	3	2	4	3	9	12
Tactical	2	3	4	0	2	5	9	7	16
Operational	3	1	2	1	2	2	6	5	11

Total Green: 18	Total Sustainability: 21
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Overall, the literature analysis demonstrates a broad interchangeability between the terms, although some of the weighting of roles differs. In the literature research and document analysis in this paper, ‘*Green*’ has been used the least of the two terms, yet it seems has been used the most malleably. ‘*Sustainability*’ however has been found more widely in both academic and practice literature, yet has seen a more significant OM weighting closer to the ‘*Strategic*’ and ‘*Operational*’ levels. This implies that there is inconsistency in the way that both terms are being utilised when considering both of terms in isolation.

When it comes to the categories of ‘*academia*’, ‘*practice*’ and ‘*environmental certification*’, utilisation is broadly fragmented. For academia, ‘*Operational level*’ considerations seem to dominate in the case of ‘*Green*’ whilst in case of the ‘*Sustainable*’, this is mostly considered ‘*Strategic level*’ in the eyes of academia. Practice spread their usage of ‘*Sustainable*’ equally over the three OM levels in the literature, and is also the dominant term. In practice, the marginally less used ‘*Green*’ is used considerably more at the ‘*Tactical level*’, with only one usage on each of the other two levels. Environmental certifications mainly use ‘*Sustainable*’, and mostly use it at the ‘*Tactical level*’, although utilise the other two levels substantially. Although they use ‘*Green*’ less, the weighting mirrors that of ‘*Sustainable*’, with the ‘*Tactical level*’ taking the most attention with scattered utilisation across the other OM levels. With regards to a common understanding of both terms, the interchangeability implied in Table 1 and lack of usage consistency between both terms can risk causing difficulties in both

academic research and practice based implementation. When bringing both terms together and combining academic and practice, the results reflect a ‘*tactical*’ focus on shared ‘*green*’ and ‘*sustainable*’ issues within an organisation in the context of FM.

Practical implications and deeper understanding of FM relevant terminology

When discussing sustainable FM it is also important to consider its impact on its sister fields of the ‘sustainable built environment’, and the study of green buildings. The previously mentioned concept of ‘*green leasing*’ is an example of an FM relevant product that is being hindered by the difficulties in finding more widely accepted definitions of ‘*Green*’ and ‘*Sustainable*’. Whilst ‘*green leasing*’ is the most commonly used term, a Google search will also illuminate that terms such as ‘*sustainable leasing*’ and ‘*energy aligned leasing*’ are also found in literature from research and practice (Google, 2016). This not only causes difficulties when attempting to source information from the perspective of practice, but also results in difficulties in presenting research in way that will be easily accessible it’s intended audience. The interchangeability between usage of terms like ‘*green property services*’ and ‘*sustainable facilities management*’ also risk muddling the decision process for end users, as well ongoing development. Should a potential service user look for ‘*green*’ service provision, this lack of consistency in terminological use may result in the user being unable to find certain service, purely because the more suitable service is instead marketed as ‘*sustainable*’.

From the perspective of academia more directly, ‘*SFM*’ or ‘*sustainable facilities management*’ dominate as terminologies in research into FM and sustainable development. As noted earlier, Google Scholar does not generate hits for ‘*green facilities management*’ as a conjunctive term, implying that this terminology enjoys a more consistent usage in academia than in practice. That being said, this consistency does not follow through when looking at both ‘*Green*’ and ‘*Sustainable*’ as terms in isolation. This latter inconsistency illuminates an existing research and arguably innovation need in the field of FM and its associated disciplines.

Whilst the authors acknowledge the difficulties in definitively resolving this conundrum in a paper of this size, the different levels of OM and their uses in the covered literature could be a starting point for a more in depth debate on this topic. This approach could also be employed outside of FM. A deeper look at definition conundrum could be useful in the fields of the social sciences, engineering and in architecture, all of whom are grappling with their own debates on the ‘*Green*’ and ‘*Sustainable*’. There is also scope that further research could help with a more definitive terms standardisation that could be of use in the further development of Sustainable FM from both the perspectives of academia and practice.

Sustainable Decision Making in Organisations

When considering the weighting of both terms from the perspective purely of organisation management, the results illustrate some fragmentation but also a degree of focus with a small margin. In the case of ‘*green*’, the weighing of usage focuses more towards a ‘*tactical*’ application overall, whilst ‘*sustainable*’ is a term that is seen as an overall ‘*strategic*’ level focus. When looking at both terms in conjunction, a ‘*green*’ and ‘*sustainable*’ approach is more focused at the ‘*tactical*’ level. Whilst the literature reflects both terms individually at different levels of organisation management, a broader focus on the issues that both terms may share, decision making marginally closer to a ‘*tactical*’ level consideration within an organisation. This can have a direct impact for organisation management. When considering the example of a green lease, the tactical level of organisation management is where the environmental targets, benchmarks and requirements are set within leasing clauses, associated documentation and even negotiations, all of which impact the FM approach and requirements to that tenancy. In a more practical context, this provides cause to reflect on whether it would

be more efficient to move a ‘green’ and ‘sustainable’ decision and policy based focuses further up the organisational management pyramid to the ‘strategic’ at a higher level, or whether the ‘tactical’ level is already the optimal stage to consider this type of decision making. It is also important to state however that the results did not indicate that both terms had an ownership of the ‘tactical level’, but rather saw a larger contextual weighting.

5. CONCLUDING REMARKS

In concluding this paper, the results and subsequent discussion show a diverse range of usage of the terms ‘Green’ and ‘Sustainable’ that offer little in the way of overall consistency. Whilst academia is somewhat more consistent in some of its terminological usage (such as in the case of acronyms like ‘SFM’), there is a usage chasm in terms of a pan discipline or pan industrial usage of the terms overall.

This paper concludes that despite more than 25 years of FM research, there is still further work that needs to be done by academics and industry leaders to standardise of both terms. Existing standardisation deficits risk slowing or muddling the development of environmental efforts within FM and other industries; however a consistent discussion could go some way towards progress. There is even room to consider that even many of us working actively in this field are not being consistent or noting a difference between the terms ‘Green’ and ‘Sustainable’ ourselves, and should consider further research provide better clarity and consistency in their usage. For research, practice and organisational decision making, there is a notable research need to better understand how to use these terms. Furthermore, we are reminded that we are still early in the story of sustainable FM, with plenty of work still to do. We should also remain mindful of one more thing, that ‘Green’ and ‘Sustainable’ development is not an event, but a process that moves incrementally towards its wider intended goals.

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