Water Stewardship and Corporate Sustainability

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ABSTRACT
The aim of this paper is to provide an exploratory review of the extent to which some of the world's leading companies are publicly addressing water stewardship as part of their corporate sustainability strategies. The paper begins with an outline of the growing importance of corporate sustainability and water stewardship. The paper draws its empirical material from the most recent information on sustainability posted on the top twelve 'Consumer Superbrands' corporate websites. The findings reveal that a majority of the selected companies address a number of elements concerning water stewardship as part of their more general approach to corporate sustainability. However corporate commitments to water stewardship can be interpreted as being driven as much by business imperatives as by any concerns for environmental sustainability or a desire to maintain the viability and integrity of natural ecosystems. More critically the authors suggest that the selected companies' commitments to water stewardship are framed within existing business models focused on technological improvements in eco-efficiency and continuing economic growth. The paper provides an accessible review of the water stewardship issues being pursued by some of the world's leading companies and as such it will interest academics, students, political commentators and business managers interested in water stewardship and corporate sustainability.

KEYWORDS: *eco-efficiency; sustainability; technology; water stewardship.*

JEL CLASSIFICATION: *Q01, Q56, M14*

INTRODUCTION

The natural resources on which business corporations rely are becoming ever more difficult and costly to access. In reviewing the *'business environment'* in a *'more complex and fast-moving world'* KPMG (2012) argues that *'shortages of a number of key resources are becoming apparent'* and suggests that *'companies in all sectors need to prepare themselves for a world where raw materials may be in short supply and subject to price volatility including large price increases and increased disruption to supplies.'* At the same time KPMG (2012) suggests that *'consumer and investor values are changing'* and that *'as they change more corporations are recognising that there is profit and opportunity in a broader*

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sense of responsibility beyond the next quarter's results' and that *'the bold, visionary and innovative recognise that what is good for people and the planet will also be good for the long term bottom line and shareholder value.'* In response to the dynamic and potentially unpredictable changes in the availability of natural resources and changing consumer and investor values sustainability is becoming an increasingly high profile issue for many companies. In reviewing *'six growing trends in corporate sustainability'* (Ernst and Young and GreenBiz, 2012) argue there is a growing awareness that *'corporate sustainability and access to natural resources are inextricably linked.'* More specifically, in identifying the *'top sustainable business trends of 2014'* Makower (2014) suggests that *'companies, communities and countries are coming to recognize that water is increasingly being paired with the words crisis or risk'*. In identifying *'water* scarcity' as one of *'ten global sustainability megaforces'* that it *'believes will impact every business over the next two decades.'* KPMG (2012), for example, claims *'businesses may well be vulnerable to water shortages, declines in water quality, water price volatility and to reputational challenges'* and that *'growth could be compromised and conflicts over water supplies may create a security risk to business operations.'* With this in mind this paper offers an exploratory review of the extent to which some of the companies behind the world's leading brands are publicly addressing water stewardship as part of their corporate sustainability strategies.

1. CORPORATE SUSTAINABILITY AND WATER STEWARDSHIP

The concept of sustainability can be traced back as far as the thirteenth century but in more recent times it re-appeared in the environmental literature in the 1970's (Kamara et al. 2006) and since then it has attracted increasingly widespread attention. Diesendorf (2000) has argued that *'sustainability'* can be seen as *'the goal or endpoint of a process called sustainable development.'* The most widely used definition of sustainable development is '*development that meets the needs of the present without compromising the ability of future generations to meet their own needs'* (World Commission on Environment and Development, 1987) which Diesendorf (2000) suggests *'emphasises the long term aspect of the concept of sustainability and introduces the ethical principle of achieving equity between present and future generations.'* However defining this concept is not straightforward and a number of contrasting and contested meanings can be identified. More specifically, there are sets of definitions that recognize that all human beings live on one planet with finite quantities of natural resources and fragile ecosystems on which all human life ultimately depends.

The term 'corporate sustainability' is now in widespread use within the business world. However Polentz (2011) claims *'ask ten different experts to define corporate sustainability you are likely to receive ten different answers' and* suggests that *'part of the problem in defining such an amorphous term arises from its continuing evolution along with the ever-increasing entry of new stakeholders, an inconsistent set of state and federal laws and the constant onslaught of newly adopted federal and state laws.'* On the one hand there are definitions which seem to emphasise business continuity more than environmental and social sustainability. Dyllick and Hockerts (2002), for example, define corporate sustainability as *'meeting the needs of a firm's direct and indirect shareholders (such as shareholders, employees, clients, pressure groups, communities etc.), without compromising its ability to meet the needs of future stakeholders as well.'* Texas Instruments (2014), for example, uses *'the term sustainability primarily in relation to the operation of our business. We believe responsible, sustainable business can meet current*

resource needs without compromising the needs of future generations.' More specifically Texas Instruments (2014) claims *'we work towards sustainability by reducing waste and inefficiency in operations including our manufacturing facilities, office buildings and distribution activities.'*

On the other hand there are definitions that more explicitly embrace environmental and social goals and look to integrate these into a company's mission and core business strategy. Here corporate sustainability is concerned with *'companies contributing effectively to a global partnership for sustainable development. It is about companies delivering wide societal value including support for health and human rights improvements, regional development and fair globalisation and respecting the environment by promoting technologies to reduce the emission of greenhouse gases and by implementing effective environmental risk management'* (CSR Quest, 2014). van Marrewijk and Werre (2002) argue that *'corporate sustainability refers to a company's activities – voluntary by definition – demonstrating the inclusion of social and environmental concerns'* but they suggest that companies develop different levels of corporate sustainability. They further argue that at the *'holistic'* level in which corporate sustainability '*is fully integrated and embedded in every aspect of the organization'* and its fundamental objective is the '*survival of life on the planet'* (van Marrewijk and Were, 2002). More generally corporate sustainability has been defined 'as *the discipline by which companies align decision-making about the allocation of capital, product development, brand and sourcing with the principles of sustainable development, in a resource-constrained world*' (Global Association of Corporate Sustainability Officers 2011).

In examining recent trends in corporate sustainability strategy and performance Ernst Young and GreenBiz (2012) argued that *'over the past 2 decades corporate sustainability efforts have shifted from a risk based compliance focus where rudimentary, voluntary, sometimes haphazard initiatives have evolved into a complex and disciplined business imperative focused on customer and stakeholder requirements.'* Many business leaders have been developing sustainability plans and programmes as an integral component of their corporate strategies. A number of factors appear to be important in helping to explain this trend. These include the need to comply with a growing volume of environmental and social legislation and regulation; concerns about the cost and scarcity of natural resources; greater public and shareholder awareness of the importance of socially conscious financial investments; the growing media coverage of the activities of a wide range of anti-corporate pressure groups; and more general changes in social attitudes and values within modern capitalist societies. More specifically a growing number of companies are looking to publicly emphasize and demonstrate their commitment to sustainability in an attempt to help to differentiate themselves from their competitors and to enhance their corporate brand reputation. More generally Elkington (2004), for example, argued that future business success depends on the ability of companies to add environmental and social value to economic value as part of the 'triple bottom line' (TBL), which focuses on *'people, planet and profit'* (Elkington, 2004).

However it is important to recognise that a number of commentators and critics see the growing business interest in sustainability as little more than a thinly veiled and cynical ploy, popularly described as 'green wash', designed to attract socially and environmentally conscious consumers while sweeping pressing environmental and social concerns under the carpet. So seen, any moves towards sustainable marketing might be characterised by what Hamilton (2009) describes as *'shifting consciousness's'* towards *'what is best described as*

green consumerism.' This he sees as *'an approach that threatens to entrench the very attitudes and behaviours that are antithetical to sustainability'* and argues that *'green consumerism has failed to induce significant inroads into the unsustainable nature of consumption and production.'* Perhaps more radically Kahn (2010) argues that *'green consumerism'* is *'an opportunity for corporations to turn the very crisis that they generate through their accumulation of capital via the exploitation of nature into myriad streams of emergent profit and investment revenue.'*

As interest in sustainability has gathered momentum so a number of attempts have been made to develop theoretical frameworks connecting nature and society and to emphasise that social and economic development cannot be viewed in isolation from the natural environment. Amsler (2009), for example, argued that *'the contested politics and ambiguities of sustainability discourses'* can be embraced to develop a *'critical theory of sustainability.' S*he further argued that current debates should be located '*within a broader tradition of social criticism'* and that *'competing interpretations of sustainability'* should be viewed as '*invitations to explore the complex processes through which competing visions of just futures are produced, resisted and realized.'* Castro (2004) has sought to lay the foundations for a more radical theory of sustainability by questioning the very possibility of sustainable development under capitalism and arguing that economic growth relies upon the continuing and inevitable exploitation of both natural and social capital.

Water stewardship is concerned with the responsible management and future planning of water resources and it is rooted in the belief that all water users have a role to play in the sustainable management of the earth's freshwater resources. That said there seems to be no agreed definition of water stewardship, but it is now in increasingly common usage to describe corporate engagement with water use. The Alliance of Water Stewardship (2013) defines water stewardship as *'the use of water that is socially equitable, environmentally sustainable and economically beneficial, achieved through stakeholder-inclusive process that involves site and catchment based activities.'* More specifically the World Wildlife Fund (2013) has defined *'water stewardship for business'* as *'a progression of increased improvements of water use and a reduction in the water related impacts of internal and value chain operations.'* In outlining water stewardship as an increasingly important concept for businesses CDP (2013) argued that *'companies with robust water stewardship strategies are typically characterised by having a comprehensive knowledge of water use across their value chain and the impact (current and projected) that water related issues have on their business and vice versa. More importantly, they have appropriate plans and procedures in place to mitigate risks that give adequate consideration to priorities of the local watershed in which they operate.'* More generally Hepworth and Orr (2013) make a clear distinction between integrated water resource management and water stewardship. The former being *'actions by an authority mandated by the state (within which ownership of the resource is vested by law) to manage water resources on behalf of all water users'* whereas water stewardship is about *'private actors increasingly involving themselves in the management of the common pool-public good regarding water'* (Hepworth and Orr, 2013).

2. FRAME OF REFERENCE AND METHOD OF ENQUIRY

In an attempt to obtain a preliminary picture of the extent to which some of the world's major companies were publicly addressing water stewardship as part of their corporate sustainability reporting the companies behind the top twelve 'Consumer Superbrands' (See Table 1) as selected by *'marketing experts, business professional and thousands of British*

consumers' (Superbrands UK 2014) were selected for study. These selected companies include the manufacturing and service sector of the economy, many of them and their brands are household names, they are generally large and/or have a high profile in the market place and their consumer superbrand status suggests they have strong consumer appeal. As such the selected companies provide a simple but nevertheless suitable framework to explore how large companies are currently addressing water issues as part of the corporate sustainability strategies and they might be expected to reflect cutting edge thinking and practice.

Table 1. Top Twelve Consumer Superbrands 2014

British Airways
Rolex
Coca-Cola
British Broadcasting Company
Heinz
Microsoft
Google
Gillette (Proctor and Gamble)
Kellogg's
BMW
Cadbury (Mondelez International)
Andrex (Halyard)

Source: Superbrands (2014)

During the past decade *'sustainability reporting has evolved from a marginal practice to a mainstream management and communications tool'* (Global Reporting Initiative 2007). Companies use a wide variety of platforms to communicate and report on environmental commitments and programmes and the European Commission Directorate-General for Enterprise lists a number of methods that businesses currently utilise including *'product labels, packaging, press/media relations, newsletters, issue related events, reports, posters, flyers, leaflets, brochures, websites, advertisements , information packs and word-of mouth'* (European Commission Directorate-General for Enterprise undated). During recent years *'the importance of online communications as part of an integrated CSR communications strategy has grown significantly'* (CSR Europe, 2009) and sustainability reporting *'is now undeniably a mainstream business practice worldwide'* (KPMG, 2013). With this in mind the authors undertook an Internet search for material on water stewardship on each of the selected company's corporate web sites (See Table 2) in April 2014 using the key words 'sustainability report' and Google as the search engine.

Content analysis is often employed to interrogate corporate websites but in the current exploratory study the authors chose to tease out the key themes and narratives by a close inspection of the corporate sustainability reports. The precise patterns of search and navigation varied from one company to another but in searching the sustainability reports and selecting material on water issues and water stewardship the authors were guided in part by the United Nations Global Compact's (2014) *'Corporate Water Disclosure Guidelines'* and in part by quasi-grounded theory. The former is reflected in the focus on specific water issues including impacts on people and ecosystems, water scarcity, pollution, regulatory uncertainty and opportunities to contribute to sustainable water management.

Table 2. Corporate Website Addresses for Top Twelve Consumer Superbrands 2014

Company	Website
British Airways	http://www.britishairways.com/travel/home / public/en_gb
Rolex	http://www.rolex.com/
Coca-Cola	http://www.coca-cola.co.uk/
British Broadcasting Corporation	http://www.bbc.co.uk/
Heinz	http://www.heinz.com/
Microsoft	http://www.microsoft.com/en-gb/default.aspx
Google	http://google.com
Gillette (Proctor and Gamble)	http://www.pg.com/en_UK/
Kellogg's	http://www.kelloggcompany.com/en_US/home.html
BMW	http://www.bmw.com/com/en/
Cadbury (Mondelez International)	http://www.mondelezinternational.com/
Andres (Halyard)	http://www.halyardhealth.com/

The latter draws on issues highlighted by the selected companies themselves in that Coca Cola, for example, summarizes its water stewardship strategy as covering three principal themes namely reduction in water use, recycling and replenishment. The information revealed by this search procedure provided the empirical material for this paper. The specific examples and selected quotations from the selected corporate websites within the paper are used primarily for illustrative rather than comparative purposes, with the focus being on conducting an exploratory examination of the water stewardship issues being addressed by the selected companies rather than on attempting to provide a systematic analysis and comparative evaluation of the ways in which different companies are addressing water issues.

At the same time the authors recognise that this approach has its limitations in that there are issues in the extent to which a company's public statements realistically, and in detail, reflect strategic corporate thinking and whether or not such pronouncements may be little more than thoughtfully constructed public relations exercises. However given the need to drive forward exploratory research such as this and to begin to understand the extent to which major companies are addressing water issues as part of their sustainability strategies the authors believe that this Internet based approach offers an appropriate and worthwhile portal for analysis and yields a readily accessible window to underpin the current study. In discussing the reliability and validity of information obtained from the Internet Saunders et.al. (2009) emphasise the importance of the authority and reputation of the source and the citing of a contact individual who can be approached for additional information. In surveying the selected companies the authors were satisfied that these two conditions were met.

3. FINDINGS

The Internet search revealed that nine of the selected companies namely British Airways, Coca Cola, BBC, Heinz, Microsoft, Proctor and Gamble, Kellogg, BMW, Nestle and Kimberley Clark posted sustainability/corporate social responsibility/corporate citizenship/environment reports on their corporate websites. While all these reports

addressed water stewardship issues there was considerable variation in both the character, detail and volume of the information provided. Google and Mendelez International provided some material on their approach to the environment which included some limited information on water resources. The Rolex corporate website contained no information on the company's approach to sustainability per se but it had posted some information on a sponsored charitable/community children's project in Mexico in which the role of water in sustaining plant and animal life and the threat of water pollution were key themes.

Within the sustainability reports a range of water stewardship issues are addressed, albeit in different measure, including strategic commitment; efficiency and reduction in water use and recycling; employee engagement; water risks; water resource management and conservation; drainage and flood defences; and employee and community engagement. While a minority of the companies look to publicly report on a wide range of issues, the majority offer a narrow focus on what they perceive to be the major issues. A small number of companies explicitly stress the strategic importance of water and their corporate commitment to water stewardship. Coca Cola, for example, emphasizes its corporate commitment to water stewardship stating *'Inside every bottle of Coca-Cola is the story of a company that understands the priceless value of water, respects it as the most precious of shared global resources and works vigorously to conserve water worldwide.'* More simply Kellogg reports *'as a food company, our business depends on access to fresh water.'*

Programmes and Initiatives to reduce the volume, and to improve the efficiency, of water consumption against set targets are reported by the majority of the selected companies. Mendelez International, for example, reports that from 2005-2010 its factories made a 50% reduction in water use per tonne of production. British Airways reported a 7% decline in water consumption at Heathrow between 2010 and 2012 and outlined its initiatives designed to direct its maintenance partners and facilities management teams into making repairs more efficiently and its plans to install infrared sensory equipped taps and automatic toilet flushing across its estate. The BBC simply provides data on the reductions in overall water consumption and in water consumption per employee since 2007-2008. Halyard has invested significant capital resources in an attempt to minimize the company's water usage and the company has set itself the goal of reducing water use by 25% by 2015, using 2010 as the baseline. More specifically Halyard reported a 17% reduction in total global water use during 2012. BMW identifies its three largest water consumers as the sanitary facilities for the workforce, which accounts for 46% of the company's water consumption, evaporation at cooling towers and its production processes, which account for 31% and 23% respectively of water consumption. In looking to reduce these figures BMW reports on the continuing installation of more water-efficient sanitary facilities, the replacement of open cooling towers by closed ones and the introduction of waterless processes in the company's manufacturing paint-shops.

Kellogg reports on a range of water saving initiatives including the installation of a reverse osmosis system at its manufacturing plant in Manchester UK in 2013 and the replacement of manual washing by an automated washing process at the company's cereal plant at Charmhaven in Australia reduced water usage by 90%. By way of a further illustration of its water reduction initiatives the Kellogg Corporate Social Responsibility Report also included a mini case study of its Georgia factory in Rome, Italy. The company reports that this production facility employs some 50 hoses and nozzles to clean the sticky conveyor belts with high pressure streams of water which, when in operation, each uses some 45 liters of water per minute. The company reports that it has introduced and installed a new

more efficient conveyor belt washing system which has reduced the water used per hose to less than 14 liters per minute. Overall Kellogg reports that the changes outlined above along with improvements to heating and sanitation systems within the factory led to a 69% reduction in water use per tonne of food production during 2012.

Commentaries on reductions in water use are also often linked to wastewater treatment and recycling. Coca-Cola, for example, claims that *'in addition to improving our water efficiency, we are also reducing our impact on water systems and contributing to improved water quality by appropriately treating wastewater and returning it to the environment.'* Coca-Cola reports that all its company owned production plants worldwide are compliant with local wastewater treatment legal requirements and standards though it recognises the challenges involved in attempting to ensure that independent bottling plants in some 200 countries are similarly compliant. Though its commentary on water stewardship is minimal Microsoft outlines its activities in water recycling in Hyderabad, India where some 1.7 million liters of water are treated annually and reused in sanitary facilities and in landscaping. Proctor and Gamble claims to be active *'in working with suppliers around the globe to investigate breakthrough water recycling technologies'* and the company provides brief details of a joint project between the EU commission and the European Chemical Industry to develop innovative technologies for plant effluent water treatment to enable more water to be recycled and re-used. At the Kellogg's plant at Queretaro in Mexico the company reports that for the past decade all waste water has been treated on site and re-used for irrigation and that no water has been directly discharged into the public wastewater treatment centre.

The role of employee engagement in water stewardship is emphasized by several of the selected companies. In outlining its approach to water reduction targets, Proctor and Gamble, for example, stresses the importance of engaging all employees and encouraging them to look for water saving opportunities in their work environment. The company reports disseminating its *'benchmarking and reapplication program'* throughout its global operations and heralds its success in ensuring that *'new sites are built with the best available water efficiency technologies.'* More specifically Proctor and Gamble reports that what it describes as *'efforts as simple as employee education can significantly reduce our water consumption'* and it cites the example of its Fabric Care plant in Cairo where *'education and total employee involvement in everyday water conservation'* has *'reduced usage by 29% since 2010.'* In a similar vein, Nestle reports its investment in the training and education of its employees which it claims *'enables them to make better informed decisions that lead to effective water stewardship.'*

The issues of risk and stress are explicitly addressed by some of the selected companies though there are contrasting positions on these issues. BMW are in the minority in reporting *'currently there is no risk to water supply at BMW Group's production plants, even though we are active in countries with high water risk such as South Africa, the USA and China.'* In contrast in 2013 Heinz initiated a *'Global Water Risk Screening'* project designed to determine the extent of water-related risks across the company's global operations and to identify where the company can best concentrate its energies in an attempt to manage critical risks and maximize opportunities. Nestle reports its use of the *Nestle Combined Water Stress Index'* to assess water stress at given locations. This index helps the company to determine the risks associated with reduced water quantity or quality as well as the risks associated with possible competition from local water users.

Coca-Cola reports requiring each of its 860 bottling plants to conduct local water source vulnerability assessments. The company also reports requiring a water source sustainability assessment as an integral part of the due diligence process when acquiring land for a new facility or purchasing a business with existing manufacturing plants. Such assessments embrace the social, environmental and political risks to the water resources which will supply the production facilities and the local communities. These include a description of the water resources available to the plant for both water supply and waste treatment; a review of available water quality; an inventory of the local relevant water resource management agencies and their policy regulation and planning priorities; and an evaluation of how water use could limit both the availability and quality of water for local communities. These assessments provide the framework for bottling plants to develop and implement action plans for risk mitigation at the watershed level.

Looking beyond their own operations, some of the selected companies address the issue of community engagement. Nestle, for example, argues that '*the greatest challenge to reduce our water consumption lies in addressing the impacts beyond our factories- in our complex supply chains.*' The scale of this challenge is enormous not only in that Nestle work directly with some 690,000 farmers but also in that the company's '*sphere of influence touches millions more through the commodities we purchase.*' At the same time Nestle explicitly recognises that engaging with its diverse and geographically widespread supply chain is critical if the company is to meet its own water security and water stewardship goals. The *'Sustainable Agriculture Initiative at Nestle'* is a global programme designed to support farmers and to address some of the major challenges in water management and irrigation including farmer and crop resilience to drought and flooding and wastewater and organic waste treatment. Kellogg reports on its work with grain breeders and growers to improve water management and irrigation practices and to introduce more draught tolerant crop varieties.

In addressing community engagement, Proctor and Gamble reports on piloting a small water stewardship project in partnership with the World Wildlife Fund in the Lake Tai basin in China. This project included wetland restoration activities to remove invasive species whilst re-introducing native species and rebuilding the traditional wetland environment and it led to a marked improvement in water quality. More generally Proctor and Gamble outlines the introduction of its *'Children Safe Drinking Water Program'* which is '*helping the nearly one billion people in the developing world who do not have access to clean drinking water.*' Here the company's *'Purifier of Water'* packets are being used to turn potentially dirty water into clean and drinkable water. In a similar vein Coca-Cola reports on its support for the United Nations Development Programme and more specifically on the *'Every Drop Matters'* programme which has undertaken some 100 projects embracing watershed restoration, sustainable agriculture initiatives and capacity building among government water managers in over 20 countries mainly in the former Soviet Union. More generally Coca-Cola also reports on its initiatives in addressing the *'water-energy-food nexus'* and in working towards the ambitious and challenging task of seeking to '*ensure water, energy and food security for everyone.*' Here some projects are enhancing the capacity of watersheds to absorb some of the threats associated with increasingly severe weather events while others are attempting to build additional resilience in response to ever increasing demands for water, energy and food.

4. DISCUSSION

The findings indicate that the majority of the selected companies address water stewardship as part of their more general approach to corporate sustainability and that many of them report future plans to further increase water efficiency and to develop and/or enhance some of their existing initiatives on water stewardship. As such the findings would appear to support Makower's (2014) position that concerns about water are becoming an increasingly important element in corporate strategy. At the same time the findings reveal considerable variations in the information the selected companies currently publicly provide on their approach to water stewardship. In part this variation reflects the diversity of the selected companies and the nature of their business operations and in part it might be seen to reflect the importance the companies recognise water has for their business and their strategic corporate commitment to water stewardship. More generally four sets of issues merit discussion and reflection.

Firstly while there are variations in which the selected companies have implicitly defined water stewardship, collectively their approach to it can be seen to be primarily constructed around business efficiency and concerns about business continuity. The dominant concern, for example, is to reduce the volume, and improve the efficiency, of water consumption which not only helps to safeguard current and future operations but also to reduce costs. As such the water stewardship initiatives and programmes within the selected companies' sustainability reports can be seen to be driven as much by business imperatives as by commitments to environmental sustainability. A number of Coca-Cola's reported watershed projects in Illinois developed in partnership with the US Department of Agriculture, for example, supply water to the company's plants.

More generally such an approach would seem to be consistent with the claim by Deloitte (2012) that companies develop sustainability issues *'based upon what matters most to the business'* and this would, in turn, seem to privilege commercial imperative in the construction and development of sustainability agendas. More critically Banerjee (2008) has argued that *'despite their emancipatory rhetoric, discourses of corporate citizenship, social responsibility and sustainability are defined by narrow business interests and serve to curtail the interests of external stakeholders.'* This, in turn, echoes Hobson's (2006) argument that rich and powerful groups will construct sustainability agendas that do not threaten consumption, *per se*, but seek to link them *'to forms of knowledge – science, technology and efficiency – that embody the locus of power '*already held by large business corporations. Here Fernando's (2003) assertion that *'capitalism has shown remarkable creativity and power to undermine the goals of sustainable development by appropriating the language and practices of sustainable development'* resonates loudly.

Secondly there is a set of issues concerning the ways in which the selected companies report, on and provide information, on their approach to water stewardship. Generally the accent on providing a simple narrative of their water stewardship initiatives and programmes, sometimes illustrated with basic descriptive statistics and micro case studies with pictures and simple diagrams being widely used to illustrate broad themes. While a number of the selected companies, including BMW, Kellogg's, Coca-Cola and Proctor and Gamble claim that their sustainability reports comply with, or reflect, the Global Reporting Initiative Guidelines (GRI), others provide information on water stewardship in their own idiosyncratic house style. Overall the lack of common and agreed frameworks and standards and the use of simple case studies makes it difficult not only to make any

meaningful comparisons between one company and another but also to assess the contribution that these companies are making towards water stewardship at regional, national and international levels.

At the same time only a minority of the selected companies provide evidence of independent external assurance of the information on water stewardship posted on their corporate websites. Though Proctor and Gamble, for example, acknowledges using the GRI guidelines mentioned above in preparing its sustainability report the company stresses *'that the GRI has not verified the contents of this report, nor does it take a position on the reliability of information reported herein*.' More formally BMW commissioned PricewaterhouseCoopers to provide *'limited assurance'* for its sustainability report. PricewaterhouseCoopers concluded its brief assurance report by noting *'nothing has come to our attention that causes us to believe that the data of the report'* has not been prepared in accordance with the current GRI guidelines. The widespread lack of independent external assurance can be seen to undermine the transparency, reliability and integrity of the sustainability information posted by the selected companies. That said it is important to remember that many of these companies are large, complex and dynamic organisations. Capturing and storing comprehensive information and data across a diverse range of business activities throughout the supply chain in a variety of geographical locations and then providing access to allow external assurance is a challenging and a potentially costly venture and one which many of the selected companies currently choose not to publicly pursue.

Thirdly a number of the selected companies have, albeit to a varying extent, sought to harness technological solutions and to promote the diffusion of seemingly environmentally friendly technologies, as an integral part of their approach to water stewardship. In general terms Microsoft, for example, argues that *'technology can help create a more sustainable future'* and illustrates its work in *'developing technologies to reduce environmental impact'* by reference to the role of innovative air cooled data centres in Iowa in reducing water use and eliminating wastewater production. Heinz reports '*our success in water conservation was achieved through a wide range of actions that extended from recycling water and installing new technologies to upgrading water treatment plants*.' BMW reports on *'a state-of-the-art dry separation process'* at the paint shop at its Spartanburg production plant in the US, as part of the company's strategy to move to '*waste water free production processes.'* Proctor and Gamble claims that its *'new sites are built with the best available water efficient technologies'* and to be using *'innovative technical solutions to reduce incoming water use.'* However Huesemann (2003) suggests a number of reasons *'why technological improvements in eco-efficiency alone will be insufficient to bring about a transition to sustainability'* and potentially more divisively Vorosmarty et. al.(2010) argue that *'massive investment in water technology enables rich nations to offset high stress levels without remedying their underlying causes, whereas less wealthy nations remain vulnerable.'* In extending this political argument Schor (2005) has suggested that not only do *'advocates of technological solutions argue that more intelligent design and technological innovation can dramatically reduce, or even stop the depletion of ecological resources'* but also that *'the popularity of technological solutions is also attributable to the fact that they are apolitical, and do not challenge macrostructures of production and consumption.'*

Finally there are broader and more fundamental tensions between commitments to promoting sustainability and the pursuit of continuing economic growth. Coca-Cola, for example, stresses the company is *'firmly committed to advancing our growth trajectory.'*

This approach is certainly consistent with the argument presented by Reisch *et al*. (2008), that while moving towards sustainability is a major policy agenda, '*growth of income and material throughput by means of industrialisation and mass consumerism remains the basic aim of western democracy*.' There are also arguments that economic growth, dependent on the continuing depletion of the earth's finite natural resources, is incompatible with sustainability and that harnessing technology will not offer a long term solution. Huesemann (200)), for example, claimed that business leaders have promoted the concept of eco-efficiency in order '*to ensure that continued economic growth and environmental protection can go hand in hand'* but argued that '*improvements in eco-efficiency alone will not guarantee a reduction in the total environmental impact if economic growth is allowed to continue.'* Looking to the future Huesemann (2003) further argued that unless growth in consumption is restrained '*technological improvements only delay the onset of negative consequences that as a result, will have increased in severity, thereby reducing our freedom to choose satisfying solutions.'*

5. Managerial and Research Implications

While the exploratory nature of this paper does not provide a basis for corporate policy development it offers a mirror with which companies might choose to reflect on their current approaches to water stewardship. That said the findings and subsequent discussion suggests a number of potential managerial and research implications. As public interest in the more sustainable use of natural resources, and more specifically in water stress, water shortages and the more sustainable use of water grows, so major companies' approach to water stewardship are likely to attract ever greater political, public and media scrutiny. However while many companies report on a range of water stewardship themes in their corporate sustainability reports not all of these themes necessarily provide appropriate vehicles for widespread public communication. The concept of the water footprint, for example, can be valuable in raising public awareness but it is probably too complex to be employed as an effective public relations tool.

At the same time although companies' public responses to both physical and regulatory risk can be measured and documented relatively easily in corporate sustainability reports, in some ways the issue of reputation, though all pervasive, is less tangible and it will provide a continuing and potentially increasingly difficult challenge for all large companies. Effective and continuing stakeholder engagement will be vitally important in complementing and enhancing water stewardship commitments and achievements documented in corporate sustainability reports and in managing their corporate reputation. Coca-Cola, for example, recognizes '*the value of maintaining an active dialogue with a diverse group of global partners, including employees, consumers, customers, distributors, shareowners, investors, nongovernmental organisations and non-profit partners.'* More specifically the company seeks feedback from its stakeholders on its water stewardship programmes on a continuous basis and reports on how it has addressed a range of stakeholder feedback. In the event, however, in addressing stakeholder concerns, for example, about providing '*more detail on water efforts with suppliers'* and to '*discuss challenges in meeting goals'* Coca-Cola's response was simply to refer stakeholders to the company's current corporate sustainability report. Looking to the future all large companies would be well advised to provide more comprehensive and user friendly commentaries on water stewardship and on their work to minimize reputation risks within their corporate sustainability reports but they will also surely need to increasingly deploy a range of communication channels, and particularly social media, effectively and imaginatively to guard and enhance reputation. At the same

time growing stakeholder pressures may effectively force many leading companies to commission more rigorous, systematic and wider ranging independent external assurance as an integral part of their corporate sustainability reporting.

More generally a number of future research agendas can be identified. Companies which are looking to strengthen their commitment to water stewardship may be well advised, for example, to commission research to investigate the most effective ways they can employ marketing communications to inform consumers about the growing importance of water within the production and consumption process and more specifically to make them more aware of their own current corporate water stewardship initiatives and achievements. More specifically market research might profitably be employed to investigate if, and how, consumer knowledge of a company's approach to water stewardship influences consumer buying behaviour. At the same time research into the development of information systems designed to facilitate continuous developments in the collection and monitoring of data on water use throughout the supply chain could assist companies in underpinning and broadening the currently limited scope of their external assurance reporting.

CONCLUSIONS

The findings of this exploratory study suggest that the majority of the selected companies are addressing various elements of water stewardship as part of their general commitments to corporate sustainability. Many of them also report future plans to continue to reduce water consumption and to develop and/or enhance some of the existing initiatives on water stewardship and as such the findings suggest that concerns about water are becoming an increasingly important element in corporate strategy. However these commitments can be interpreted as being constructed around the search for operational efficiencies and cost reductions and being driven by business imperatives as much as by any systematic long term commitment to environmental sustainability or to maintaining the viability and integrity of natural ecosystems and on reducing demands on finite natural resources. Further there is currently only limited evidence of any independent external assurance of the reports and information the selected companies provided on their water stewardship achievements. More critically, the authors suggest that the selected companies' commitments to water stewardship are couched within existing business models focused on technological improvements in eco-efficiency and continuing economic growth. As such this echoes Roper's (2012) belief that for many companies sustainability represents '*a compromise that essentially requires very little change from dominant economic driven practices but effectively works to defuse opposition, increase legitimacy and allow business as usual.*'

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