Sustainable Business: Are we heading in the right direction?

Author:

Dr Don Clifton, PhD, MBA (Advanced), MABP, BA, GAICD

University of South Australia

Email: doncmail@bigpond.net.au

September 2011

Abstract:

This paper questions why, despite the sustainable development concept having been prominent at the international level for well over 20 years, there is little to show by way of a transition to a sustainable world. Instead, in many ways, the situation is deteriorating. The paper critiques the mainstream sustainable development approach as advocated by business, and as is prominent in the political sphere, to consider if this is itself a key problem. The paper concludes that it is. Rather than helping society achieve needed change, this approach creates a false sense of progress that acts as a barrier to the more decisive action that is necessary to address the underlying drivers of humanity's unsustainable behaviours. Further, the paper proposes that the very act of pursuing mainstream sustainable development makes a sustainable world harder to achieve. A way forward for the business sector is proposed by it embracing a more Transformational sustainable world approach in both its internal activities and in its advocacy in the broader public and political space.

Key words

Sustainable world, Sustainable development, Reformist, Transformational, Ecological Footprint, I=PAT.

1. Introduction

The need for humanity to live sustainably, that is, for there to be a *sustainable world*, has roots that date back thousands of years in concerns expressed at the environmental damage humans cause (Hughes 2001). Contemporary sustainable world discourse is often dated from the 1880s and the response to environmental damage that paralleled the emergence of the industrial revolution, and subsequent progression of environmental thought through to the advent of the modern day environmental movement in the 1960s (Estes 1993; Pezzoli 1997; Mebratu 1998). Following the release of the 1987 World Commission on Environment and Development's report "*Our Common Future*" (the *Brundtland Report*) (WCED 1987) and a series of follow-up international events including the 1992 Rio UN Conference on Environment and Development, and the 2002 Johannesburg World Summit on Sustainable Development, the sustainable world concept, often expressed as *sustainable development*, has since gained prominence on the international stage (Speth & Haas 2006; Blewitt 2008). The concept is now well embedded in national and

international political circles, in the business sector, in the agendas of a broad range of NGOs, social groups, and research organisations, and in many academic and professional disciplines (Clifton & Amran 2010).

Despite this, humanity is not living sustainably. Absolute and persistent poverty continues to affect hundreds of millions of people (Rees 2008; Bell 2009), the resource-use gap between the rich and the poor is increasing (Rees & Westra 2003; Bell 2009), the Earth's ecosystems continue to deteriorate (UNEP 2007; Brown 2008), atmospheric greenhouse gas loads continue to rise driving increased global warming and ocean acidification (UNEP 2009; IPCC 2010), and humanity's use of the Earth's renewable resource base continues to exceed its rate of regeneration, with this unsustainable rate of use accelerating (Rockström et al. 2009; Footprint Network 2010a).

Why is this happening? The purpose of this paper is to consider whether the dominant sustainable development approach is itself the problem such that, regardless of how aggressively it is pursued, it is by its nature unable to, or is highly unlikely to, deliver its promised sustainable world outcomes. Although focusing on the business sector, the findings of this critique are equally relevant to other social actors in their pursuit of sustainable world outcomes, including governments, religious organisations, educational institutions, NGOs, communities, families, and individuals.

The paper begins by considering what it means for there to be a sustainable world, and describes two main sustainable world approaches: *a Reformist approach*, which is consistent with mainstream sustainable development, and a *Transformational approach*. What it means for businesses to contribute to a sustainable world is then considered in terms of the *sustaining corporation*.

Reformism, which is the approach advocated by the business sector, is then assessed in terms of: (a) Ecological Footprint Analysis (*Footprint Analysis*) in conjunction with *I=PAT* (I=PAT representing humanity's ecological impact (*I*) as a function of population (*P*), consumption/production per capita (*A*), and technologies used in the consumption/production process (*T*)), and (b) some of the key strategies advocated by business by which this sector proposes that it can make a contribution to a sustainable world, namely maximisation of renewable natural resource productivity, efficiency of resource use in production, and the uptake of more environmentally benign production and consumption practices.

The analysis concludes that pursuing the mainstream Reformist sustainable development agenda is highly unlikely to progress humanity towards the achievement of a sustainable world. Further, rather than helping society achieve needed change, this paper argues that Reformism can instead create a false sense of progress that acts as a barrier to the more decisive action that is necessary to address the core underlying drivers of humanity's unsustainable behaviours. In addition, the very act of pursuing the Reformist approach can make the sustainable world goal harder to achieve.

2. Sustainable development and a sustainable world

Sustainable development is a concept that forms part of a broader set of ideas focused on what it means for there to be a sustainable world. Despite agreement that a sustainable world is something we need (Wissenburg 2001; Osorio, Lobato & Castillo 2005; Gould & Lewis 2009), what is required to progress to such a world, and what it might look like when (and if) we get there, remains ambiguous, contested, and grounded in different value systems that defy efforts to find agreed common ground beyond mere generalised motherhood slogans (Jickling 1994; Barry 2003; Gibbs & Krueger 2005; Osorio, Lobato & Castillo 2005; Manderson 2006; Gould & Lewis 2009). Despite this, two main streams of sustainable world thought, which in this paper will be referred to as a *Reformist approach* (or *Reformism*) and a *Transformational approach*, are evident in the literature.

Reformism sees the current dominant socio-economic system[1] as fundamentally sound and well capable of delivering the key Reformist goal of continued human development or, more commonly, sustainable development. Under this approach, humanity's challenge is to pursue human development through continued economic growth and technology advance, but in ways that address the ecological and social harms that are currently being experienced (i.e., make them 'green-and-just'). Other key features of this approach include: (a) continued economic growth as necessary to overcome problems of poverty and to promote general human wellbeing, (b) continuation of the current globalisation and free-trade agenda as necessary to underpin these economic goals, (c) technological advance as necessary to improve resource use efficiency, maximise natural resource productivity to meet human demands, and to develop less polluting production and consumption processes, and (d) the incorporation of full externality pricing and ecosystem values into the market pricing system as a key mechanism for ensuring sustainable natural resource use (Diesendorf 1997; Williams & Millington 2004; Clifton 2010a).

The Transformational approach however sees the current dominant socio-economic system as a root cause of current unsustainable behaviours and, to progress a sustainable world, transformational change is needed. Key features of this approach include: (a) human wellbeing as best progressed through consumptive sufficiency and a focus on wellbeing through life experiences, (b) continued consumptive growth as unsustainable and a primary cause of both ecological problems and poverty, (c) poverty as best resolved through resource reallocation not more global-level resource-throughput-growth, with a key role for the rich, especially the industrialised North, to cease the exploitation of resources from the politically and economically weak, and (d) constraints placed on

[1] *The dominant socio-economic system that is seen to either need reforming is that of an economic growth model encompassing free trade, globalisation, a key role for multi-national corporations, a focus on technological advance, and wellbeing through increased personal income and consumption. This paradigm goes under a number of tag-names in the literature including the 'technological social paradigm' or 'technocentrism' (Gladwin, Kennelly & Krause 1995; Bell 2009), and 'liberalism' (or neo-liberalism) in the sense of liberalism being "a view of order linked to material progress, endlessly stimulated through science, technology, and corporate innovation within the lax constraints of the marketplace" (Laferriere & Stoett 2006, p. 7). It also embraces ideas consistent with human exemptionalism (Bell 2009) and modernism (Gare 2000). In this sense, socio-economic system dominance can be seen in terms of the system that is currently dominant in the world by way of its economic and political power.*

use of the Earth's natural resources such that it remains within ecosystem limits (Diesendorf 1997; Williams & Millington 2004; Clifton 2010a).

Reformism is the current dominant sustainable world approach and is consistent with the sustainable development agenda promoted by the business sector, the UN and its related bodies, and by most, if not all, governments (Handmer & Dovers 1996; Gould & Lewis 2009; Clifton 2010a). A number of authors point out that not only does Reformism dominate, it is the only sustainability discourse that is granted legitimacy in political and commercial circles – to be heard politically or by business, any pathway forward for society to pursue sustainable world objectives needs to fit the Reformist model (Handmer & Dovers 1996; Gould, Pellow & Schnaiberg 2008). This has not prevented Transformational narratives from being aired in other ways, but they rarely, if ever, find acceptance within political and business domains as a genuine and credible sustainable world approach.

Despite their differences, both the Reformist and Transformational approaches see a sustainable world as having to do with:

> *"the flourishing of life on Earth, incorporating both human and ecological wellbeing, over an indefinite time frame. This wellbeing is grounded in principles of intra-generational and inter-generational justice, and in the maintaining of biological and human-cultural diversity"* (Clifton 2010a).

In this paper, these general principles will be termed the *wellbeing+justice* sustainable world principles.

3. Sustainable world approaches and I=PAT

Another way of looking at the Reformist and Transformational approaches is in terms of *I=PAT* (Holdren, Daily & Ehrlich 1995; Chertow 2000; York, Rosa & Dietz 2003), which presents human impact on the environment *I*, as a product of:

P: population.

A: affluence, represented in terms of consumption/production per capita, usually as per capita GDP.

T: technology, in terms of the ecological impact per unit of consumption/production.

The Reformist and Transformational approaches, summarised in I=PAT terms, are shown as Figure 1.

Figure 1: Reformist and Transformational approaches in I=PAT terms

IPAT element	Reformist	Transformational
I	Reduce renewable natural use to sustainable levels by focusing on *T* and using (mostly) market pricing systems that internalise all social and ecological externalities[2].	Set limits on renewable natural resource use to be well within regenerative limits. All of *PAT* are addressed to ensure limits are not breached.
P	Orientation to maximising the human population that can be supported within sustainable world criteria. Contain very high population growth rates in some (mostly developing) countries. Prevent population decline in some (mostly developed) countries. Otherwise allow population to settle to a 'natural' level.	Current human population is too high and unsustainable, and is an issue for all countries to address. A long term population reduction strategy is required through collective non-coercive and non-discriminatory choice.
A	Continued global GDP growth is necessary to progress human wellbeing and overcome poverty. Reducing consumption is, for the most, not a viable option and will harm society and fail to help the poor.	Increased consumption is needed for some where basic needs are not being met but this is achieved through more equitable distribution, not more global GDP growth. Overall, and especially in the developed world and for the wealthy in developing nations, resource consumption needs to be reduced.
T	Technological progress to overcome the impacts of *P+A* is the key to living sustainably and to reducing *I* to be within ecologically sustainable limits.	Technology is an important part of the overall sustainability solution but on its own it will not achieve the needed change. Technology needs to be progressed with caution.

Source: Clifton (2010b).

I will return to the I=PAT formulation shortly when considering Reformism's merits.

4. Business and a sustainable world

Both the Reformist and Transformational approaches see the business sector as a (or the) major cause of ecological harms at local, regional and global scales and, as a consequence, this sector needs to play a key role in solving these problems (WCED 1987; Welford 1997; Bruno & Karliner 2002). Much has been written on what the business sector and individual corporations within it need to do to progress a sustainable world outcome, including reducing pollution, increasing efficiency of resource use, investing in new 'cleaner' technologies, redesigning and re-engineering products and services to make them more environmentally friendly, engaging with various social actors to improve firm performance in meeting social expectations, transferring modern technologies to poorer nations, and so on (WCED 1987; McDonough & Braungart 2002; Hart, S & Milstein 2003; Hart, SL 2007; UN 2008; WBCSD 2008; Esty & Winston 2009). What is important for the current discussion however is the ends to which these actions are directed and in this respect, the phases model of Dunphy, Griffiths & Benn (2003) can be instructive.

[2] *This does not mean that Reformism ignores policy limits on renewable natural resource use – cap and trade systems (e.g. for carbon emissions) or quota limits (e.g. for fisheries) are examples of such policies. The focus for Reformism however is more towards market pricing mechanisms than the strong scale-limiting strategies of the Transformational approach.*

The phases model provides a framework whereby a corporation's (or more broadly, an organisation's) approach to a sustainable world can be assessed depending on how it slots into various sustainability phases based on human and environmental practices and performance. The ideal phase, and where Dunphy et al see a need for all corporations to position themselves in order to progress a sustainable world outcome, is in what they term the *sustaining corporation* phase that is, where a corporation:

> *"[provides] an excellent return to investors….[but where its] fundamental commitment is to facilitate the emergence of a society that supports the ecological viability of the planet and its species and contribute to just, equitable social practices and human fulfilment"* (p. 16).

For Dunphy et al, a sustaining corporation is not only committed to making a positive contribution to human and ecological wellbeing in its own internal operations, but also actively advocates for change in the broader social context. The sustaining corporation is therefore one that also seeks to:

> *"exert influence on the key participants in the industry and in society in general to pursue human welfare, equitable and just social practices and the fulfilment of human potential of all.…[It] tries to assist society to be ecologically sustainable and uses its entire range of products and services to this end,….[and] is prepared to use its influence to promote positive sustainability policies on the part of governments, the restructuring of markets and the development of community values to facilitate the emergence of a sustainable society"* (p. 26).

A sustaining corporation is then committed to progressing the wellbeing+justice sustainable world criteria, both within its internal operations and in the broader social context, and it is these ends to which its various activities are directed.

But there is more to it than this. Humanity has no choice but to live sustainably and, from an intergenerational justice perspective, we are morally bound to do so. Living sustainably must take priority over everything else including corporate survival – the sustaining corporation is then the proviso for corporate survival. For a sustainable world to come about we need, amongst other things, to transition to a socio-economic system that reliably eliminates any corporation (or any organisation for that matter) that fails to positively contribute to a sustainable world, regardless of its financial performance. Currently the socio-economic system only reliably eliminates corporations that consistently fail financially. It is this *sustainable world comes first* message that, as a starting point, we need to hear come from the business sector, actively supported by genuine action to progress this social system transition.

5. Reformist or Transformational approach?

So if the business sector has an important role in progressing a sustainable world agenda, what approach should it be advocating? This is a challenging and controversial issue but one that needs to

be confronted. We do not really have a second chance to live sustainably – we either transition to a sustainable world in an orderly way or face some form of imposed correction with consequences that may be far from desirable. One way to consider this 'which-approach?' question is to use Footprint Analysis coupled with I=PAT, a task to which this paper now turns its attention.

The characteristics of Footprint Analysis are well documented and these details will not be reproduced here (for examples see Wackernagel et al (2004), Kitzes et al. (2007), Footprint Network (2008). In brief however, Footprint Analysis involves:

(a) Calculation of an *Ecological Footprint* measure of human appropriation of the Earth renewable natural resources, usually expressed in terms of a standardised measure of global hectares per capita (ghpc).

(b) Calculating a measure of available *Biocapacity*, that is, the regenerative capacity of the Earth's renewable natural resource base (also as ghpc).

(c) A comparison of these two measures to determine if humans are living in *ecological credit* or *ecological deficit*.

As such, Footprint Analysis seeks to determine a sustainability bottom-line, that being the extent to which humans are living within the reproductive capacity of the Earth's renewable natural resource base as opposed to depleting the resource base.

The current global-level Footprint Analysis data is shown as Figure 2. In summary, humans have an average Ecological footprint of about 2.7 ghpc compared to available Biocapacity of about 1.8 ghpc. This means that humans are using renewable natural resources faster than nature can replenish it – we are drawing down on these resources at a rate of some 150% of its regenerative capacity.

Figure 2: Current Footprint Analysis data

Item	Value
Global average Ecological Footprint.	2.7 ghpc
Global average Biocapacity.	1.8 ghpc
Ecological Footprint as a % of Biocapacity.	150%

Data source: Footprint Network (2010b)

So what is the Reformist answer to this problem? Well, if we take *I* in I=PAT to equate to the Ecological Footprint measure, we can assess the Reformist solution by plugging in the data shown in Figure 3 to take us through to the year 2050 and observing what *T* needs to achieve:

Figure 3: Projecting the Ecological footprint – I=PAT inputs for the Reformist approach

Factor	Reformist modelling inputs
I=PAT element: *I* (Ecological footprint)	• Current global average Ecological footprint = 2.7 ghpc (see Figure 2) • Projected 2050 Biocapacity based on projected 2050 population and holding all else constant = 1.3 ghpc.
I=PAT element: *P*	• Current human population = (approx) 7.0 billion (U.S. Census Bureau 2011). • Mid-range UN projection to 2050 = 9 billion (UN 2007).
I=PAT element: *A*	• Assume real global average per capita GDP growth of 1.5% pa[3].
Decoupling rate between *P+A* and changes in *I*	• Assume that *I* grows at 75% of changes in *P+A*[4].

The results of this I=PAT projection are shown in Figure 4. Based on the Figure 3 inputs we end up with a projected 2050 global average Ecological footprint of about 4.1 ghpc as compared to total Biocapacity of about 1.3 ghpc. But this 1.3 ghpc of Biocapacity is not all available for human use – some of it needs to be set aside for other species, some to ensure ecosystems remain resilient, and some to allow for the conservative nature of the Footprint Analysis data. How much should be set aside as not available for human use is a debated issue but something in the order of 50% or more may well be needed (for a detailed discussion on this issue, see Clifton (2010b)). Using this 50% value, available Biocapacity for human use by 2050 is more in the order of 0.7 ghpc, not the 1.3 ghpc shown.

Figure 4: Footprint Analysis data projected to 2050

Item	Value
Ecological footprint projected to 2050 – average per person for all of humanity.	4.1 ghpc
Biocapacity projected to 2050 – average per person for all of humanity.	1.3 ghpc
Ecological footprint as a percentage of Biocapacity.	(approx) 300%

So what does all of this mean? Put simply, the Reformist agenda proposes that for humans to live within the Earth's Biocapacity limits by 2050 (if this time frame was adopted as a worthy target), we would need to rely on *T* to reduce the impact of *P+A* to pull the projected 2050 global average Ecological Footprint of about 4.1 ghpc down to about 0.7 ghpc, more than a 5-fold (over 80%) reduction. To put the magnitude of this challenge into perspective, of the 152 nations listed in the most recent set of Footprint Analysis accounts (Footprint Network 2010b), only 6 have an Ecological Footprint value of 0.7 ghpc or less, all of which are in the category of least developed nations. Only 23 have a current Ecological Footprint of 1 ghpc or less. In comparison, on average, the developed nations have a current Ecological Footprint of about 6.1 ghpc.

[3] *The global GDP per capita growth rate from 1961-2006 = 1.9% pa (WRI 2010). The Brundtland Report calls for annual economic growth of 3%-4% in the North and 5%-6% in the South.*

[4] *The relationship between I and changes in P and A is not well researched. For a detailed analysis of this issue see Clifton (2010b). The 75% relationship used here is consistent with that observed in the European Union over the period 1971-2008 (WWF 2007).*

We can of course spend time debating whether the Footprint Analysis numbers are plus or minus some level of error margin, by how much *I* goes up based on changes in *P+A*, and how much Biocapacity should be set aside for other species, but this is more a distraction than an issue of substance – the numbers are big and challenging even allowing for uncertainty in the actual values quoted. It is also true that humans living within the Earth's Biocapacity limits is only one of the broader set of issues needed in order for a sustainable world to be realised, but it is nonetheless a necessary condition (Nijkamp, Rossi & Vindigni 2004; Footprint Network 2006; Giljum et al. 2007; Wilson, J, Tyedmers & Pelot 2007). The harsh reality is that despite sustainable development having been prominent on the world stage for over 20 years since the publication of the Brundtland Report, natural resource use is increasing, the global aggregate Ecological footprint is increasing, and ecological degradation continues at an alarming pace. Yet we continue to beat the Reformist sustainable development drum in the hope that a series of technology breakthroughs will somehow transport us to a sustainable world.

But would we tolerate this approach in business? Imagine you were a board member of a broadly held public corporation. The firm has plenty of capital, and is a hive of activity with new staff being added, employees well paid, and production strong. The problem is that the business is burning capital – costs exceed revenues, the gap is increasing, and there is no end to this in sight. The board quizzes the CEO on a strategy to address this problem. The CEO's answer is 'have faith in our R&D department – I'm convinced, as is the entire management team, that we will find the technology breakthrough to give us a winning product'. You protest and ask for a restructure to reduce costs, wind back staff numbers, and pull costs within revenue limits, and do so in a clear and rapid time frame. The CEO responds by accusing you of being a pessimist, lacking imagination, failing to show faith and confidence in the management team, and rejects your view as being worthy of discussion. What would you do? I would think the first step would be to sack the CEO and make the needed structural change. But without stretching the analogy too far, this scenario is basically what is happening in the sustainable world space – we are burning renewable natural capital, continuing to push the underlying drivers of resource consumption that are causing the problem, living in hope of human creativity solutions through technology advance, and dismissing as nay-saying pessimists or extremists those who stand up and say the current Reformist sustainable development approach is unrealistic, highly risky, and showing no meaningful signs of working.

Before moving on, one last comment on the growth agenda that is a key plank of Reformist sustainable development is helpful for this current discussion. It is well known and documented that GDP growth and consumption of material goods is limited in its ability to improve human wellbeing. Above a certain level of personal income, and a level which the industrialised world has long since exceeded, rising incomes have little impact on improved human wellbeing and can instead detract from it (Daly, H & Farley 2004; Daly, HE 2005; de Graff, Wann & Naylor 2005; Marsden & Smith 2005; Cato 2009; TAI 2009). The point here is that regardless of the challenges in addressing the impacts of *P+A* via a focus on *T*, the pursuit of more *A* is itself limited in its ability to deliver continued improvement in human wellbeing.

The message here is a simple one. The Reformist approach presents a road map that is challenging to accept as able to deliver on a key and necessary condition for a sustainable world, that being for humans to live within the Earth's Biocapacity limits. Further, the Reformist approach is far removed from the behaviour we would accept in how our own businesses are managed and, in addition, it is based on an economic growth premise that has been shown to fail to deliver the continued gains in human wellbeing that it otherwise professes to do. Despite these contradictions, the business sector still currently advocates the Reformist approach as the way forward to achieve a sustainable world. But surely we must start to openly question the merits of this stance.

6. Unpacking *T*

But despite the concerns discussed above, does a focus on *T* offer a meaningful pathway to a sustainable world regardless of the magnitude of the challenge? There are a number of themes that can be identified in unpacking *T's* component parts to help answer this question, however the three that will be considered here are:

(a) Improving renewable natural resource productivity.

(b) Improving resource use efficiency in the production process.

(c) Adopting less harmful behaviours in the production and consumption process.

6.1. Improving renewable natural resource productivity

Applying new technologies to increase the productivity of the Earth's renewable natural resources is an important part of the Reformist agenda and includes things such as the use of modern industrialised agricultural practices, genetic engineering of plant and animal species, and so on. Debates continue as to whether these technologies genuinely have increased resource productivity in a sustainable way. Some claim that this is clearly true while others are far from convinced and propose that this is only apparent if all negative externalities (use of fossil fuels, chemical and fertiliser pollution, long term soil degradation, biodiversity loss, destruction of cultures, etc) are excluded from the analysis. (For an example of these pros and cons arguments, see Shiva (2005)). But beyond this debate is the issue of ecosystem resilience.

Resilience is mostly talk of in two main ways in the literature, namely: (a) engineering resilience, which has to do with the ability of a system to bounce back to its pre-disturbance state following some from of disturbance – such as a personal illness and our ability to overcome it and get back to normal health, and (b) socio-ecological resilience, which has to do with the ability of a system to continue to function despite exposure to disturbance, with this form of resilience enhanced through a range of factors including diversity within a system, maintaining of spare capacity and keeping well away from system tipping points, and the ability of a system to adapt to change, evolve, and to self organise (Holling 1996; Walker & Salt 2006; Gunderson, Allen & Holliday 2010). It is socio-ecological resilience that is of key importance for a sustainable world, and has to do with continuing to meet the wellbeing+justice sustainable world criteria regardless of what changes might occur to

ecological and social systems over time. In this sense, the concepts of a sustainable world and socio-ecological resilience are inseparable (Handmer & Dovers 1996; Walker & Salt 2006; Adger 2007).

The key point to be made here is that in the sustainable world context, an approach that seeks to maximise renewable natural resource productivity to underpin a quest for continued economic growth as a means of achieving human wellbeing (and the wellbeing of as many people as can optimistically be accommodated on the Earth) undermines the resilience of the very system on which it depends – the very pursuit of the goal is its own undoing. This occurs for many reasons including: (a) the removal of spare capacity as all natural resources are pulled into the field of production maximisation, (b) the imposition of change at a faster rate than ecosystem feedback mechanisms can provide information concerning the consequences of this change, and (c) in general, pushing ecosystems close to or beyond tipping points without society necessarily even knowing this may be happening and with, more often than not, very undesirable consequences (Meadows, Randers & Meadows 2004; Walker & Salt 2006).

6.2. Improving resource use efficiency in the production process

One of the main business-case arguments for corporations to pursue a sustainability agenda is the claimed win-win that can come from more efficient use of resource inputs in the production process. This is a more-from-less argument where the environment wins through less pressure on resource use, and the firm wins by an improvement to the bottom line (Hargroves & Smith 2006). But if we assume a win for the firm, is there really a corresponding win for the environment and for a sustainable world?

Efficiency gains have long been recognised as a key means by which firms improve productivity, reduce costs, and increase wealth (Princen 2005; Gould, Pellow & Schnaiberg 2008). In fact, this is why efficiency gains are so greatly prized by business. It is also well known that production-based gains in resource efficiency can, and often do, lead to an increase in output and consumption that negate some or all of the resource use gains (*rebound*), or result in greater overall resource use (*backfire*) (Polimeni et al. 2009). The extent of rebound or backfire varies from case to case and certainly could benefit from greater research, however it is nonetheless a well understood and recognised phenomenon (Polimeni et al. 2009).

This does not mean that using resources efficiently in the production process is not important – it clearly is and is something that all businesses need to aggressively pursue if we are to transition to a sustainable world. The problem is that unless this is coupled with a means to prevent efficiency gains being spent on more resource-consuming production and consumption that negates the gains achieved, then we are deluding ourselves into thinking that progress is being made. This has major implications for I=PAT in that if an important component of *T* is efficiency gains, then the more this is pursued in the absence of some mechanism to control how the gains are spent, the more it

will drive increases in *A*, putting further pressure on *I* (the Ecological Footprint), and making the needed offsetting impact of *T* even harder to achieve.

6.3. Less harmful behaviours in the production and consumption process

Less harmful behaviours in the production and consumption process can cover a multitude of issues including less harmful ways of extracting recourses (e.g. fishing practices that reduce by-catch and the killing of non-target species), less polluting technologies, products manufactured for ease of recycling, and so on. All of these practices are again important for business and society to aggressively pursue. The business sector in particular has a key role to play as for the most, it is business that determines, amongst other things, which resource extraction technologies are used, what the product design and manufacturing technologies are, what set of options the public has to select from in its consumption decisions, what information members of the public have in relation to the impacts of their consumptive choices, and whether consumptive waste can be recycled in a meaningful way (Bruno & Karliner 2002; Gould, Pellow & Schnaiberg 2008). But do we have a similar problem here as for resource use efficiency?

In some respects, yes. One reason is that the more we feel our activities are less harmful (less polluting, less resource intensive, and so on), the more we may feel inclined to consume, or be convinced by marketing departments that we can consume, and to believe we can do so sustainably. One way to explore this issue is to look at the idea of green consumerism, something that is actively promoted in the business sector as one aspect of the business sustainability agenda.

Green consumerism refers to the development, packaging, and marketing of products claimed to be 'environmentally friendly' (in an absolute or relative sense). The marketing message of this approach is simple – you can save the world through your consumption choices, and can consume with a clear conscience (Beder 2002; Bell 2009). The business message is that green products and green marketing can provide opportunities to increase sales and profits. All up so the claim goes, everyone wins – business, the consumer, and the environment.

But this strategy is not difficult to see through. For one thing, green consumerism continues to push humanity down the resource consumption path which has been shown earlier in this paper to be currently running at unsustainable rates – consuming more is not going to solve this problem regardless of the 'green' nature of what is consumed (Beder 2002). In addition, green consumerism simply continues the business-as-usual marketing strategies of need creation through the deliberate engineering of feelings of dissatisfaction and deprivation in people's lives, offering the solution to this dissatisfaction through consuming a particular product (in this case, a 'green' product), and cycling the whole dissatisfaction-consume-dissatisfaction-consume routine indefinitely to drive continued consumptive demand and economic growth. This entire need-creating-and-consuming process is however ecologically damaging, undermines human wellbeing, and offers no durable wellbeing solution (Brown 1995; Raiklin & Uyar 1996; Hamilton & Denniss 2005; Cato 2009).

Another stream of thought connected to this issue relates to the claimed shift in production and consumption activities within economies as they continue to industrialise – the further down the industrialisation path we move, the greater the proportion of the economy that is dedicated to less resource intensive service and information industries. In this respect, so the claim goes, increased industrialisation moves a society to becoming less resource intensive and hence contributes to the delivery of less harmful production and consumption behaviours. But is this really something of any significance in addressing sustainable world problems?

The claim that the service sector becomes an increasing part of the economic system of industrialised nations is not as clear cut as it may seem (for a discussion on this issue, see Victor (2008) and Douthwaite (1999)), however, one way to look at this issue is to go back to the Footprint Analysis data. An important strength of the Ecological Footprint calculation is that it is consumption based – what matters is a person's Ecological Footprint, or collectively a nation's overall Ecological FFootprint, based on what is consumed regardless of where in the world those goods or services are produced (Wackernagel et al. 2006; Kitzes 2007; Footprint Network 2008). Figure 5 shows the Footprint Analysis data by high, middle and low income nation groups. What these data show is that the high-income countries (comprising countries of the industrialised West, plus Japan and a few other highly industrialised nations) run by far the highest Ecological footprint, and one that is well above the global average. So in this sense the services transition argument comes up as meaningless. The industrialised countries that presumably have transitioned to a higher proportion of service industries in their economic mix have per capita Ecological footprint measures well above what is sustainable on a global level.

Figure 5: Ecological footprint by national income

	Population: % of global total	**Actual Ecological Footprint: % of global total**	**Ecological Footprint per capita**
World	100%	100%	2.7 ghpc
High-income nations	15%	38%	6.1 ghpc
Middle-income nations	65%	52%	2.0 ghpc
Low-income nations	20%	10%	1.2 ghpc

Data source: Footprint Network (2010b)

7. Discussion and conclusion

The critique presented in this paper, although only scratching the surface of a few themes by which mainstream Reformist-based sustainable development can be assessed, suggests that despite its dominance, it is challenging to believe as a viable pathway forward for humanity. Instead,

Reformism is structured around population, economic, and consumption strategies that place increased pressures on already over-taxed ecological systems, and places a level of faith in human technological advance to overcome the impacts of these pressures that is, to say the least, challenging to believe. Further, some advocated technology strategies, although very important for business to pursue (resource use efficiency at the production level, less polluting products and so on) can, when coupled with the broader Reformist agenda, actively work against the very human and ecological wellbeing objectives Reformism seeks to achieve.

The purpose of this paper has been to present the major streams of sustainable world thought (Reformist and Transformational) and to offer some arguments that call into question the credibility of the mainstream Reformist view, particularly as it is played out in the business sector. A detailed review of what we now do with this information and how the business sector (and governments, universities, NGOs, and society in general for that matter) should respond, although beyond the scope of this current discussion, certainly needs continued effort. The following comments may however prove helpful in this endeavour.

One response for business to the issues presented in this paper is to say 'well, pursuing mainstream sustainable development will probably not work in transitioning society to a sustainable world so why bother – let's just give up on sustainability altogether, get on with life, and hope that something will sort itself out in the future'. This is not an acceptable option. We owe it to those of the current generation on whom our business activities impact, and to generations that follow, to solve our sustainable world problems.

Alternately, the business sector could continue to push, internally and publically, the mainstream sustainable development Reformist line in the hope that, despite its problems, it will somehow still get us into sustainable world territory. But this something-is-better-than-nothing approach is not necessarily a helpful strategy. As two authors have put it, an approach to a sustainable world that is based on Reformist type changes:

> *" [is] likely to simply put off the needed changes to a time when options will have narrowed…[it] is possibly the most dangerous path: a relief valve that gives the appearance of change and alleviates symptoms for a time"* (Handmer & Dovers 1996, pp. 505-506).

In other words, Reformist based sustainable development not only gives a false appearance of positive action, but can also block the more decisive action that is needed to address core underlying drivers of humanity's unsustainable behaviours.

So should business adopt the Transformational approach and pursue this as a pathway forward? The claim of this paper is 'yes' and a few concluding comments may help to further support this view beyond what has already been presented. First is that the Transformational approach offers a way forward that goes beyond the technical fix solutions of Reformism and the problems this creates, some of which have been identified in this paper. It instead places on the table alternatives that

Reformism is otherwise unwilling to entertain, such as Reformism's unwillingness to pursue strategies that challenge the core tenets of the current dominant socio-economic system. In this respect, the Transformational approach offers society broader options and freedoms to pursue sustainable world pathways rather than, as does the Reformist view, expect that sustainability actions can be engineered to fit a pre-existing socio-economic ideology. But the Transformational approach is still no guarantee of sustainable world success. The challenges ahead remain substantial and many of the questions of how to transition society to one that is living sustainably have yet to be identified let alone answered. Transformational advocates however do not pretend to have all of the answers nor is there a one-size-fits-all sustainability solution on offer. To try and create such a model misses the whole point of the social and cultural context in which sustainability initiatives need to be developed and enacted.

Next is that business alone cannot solve all of our sustainable world problems. All of society needs to be on-board including governments, supra-national organisations, religious organisations, NGOs, communities, families and individuals. The point to be made here though is that the business sector has substantial power and influence, possibly more so than any other social institution, to drive needed change (Bruno & Karliner 2002; Hart, SL 2007; Speth 2008). In this respect, the business sector needs to take the lead in breaking free of Reformist constraints and, in keeping with the sustaining corporation concept discussed earlier, it needs to actively engage in the more creative solutions that the Transformational approach presents, and do so in both internal business operations and in the sector's public sphere engagement.

Lastly, and expanding on this point of business sector advocacy for broader social change, is the issue of social capacity to change. Robinson (2004), discusses the need for a society that is facing fundamental change to have "*an alternative to the existing order that is viable and that is seen as viable and preferable by a majority of society*" (p. 172). The point here is that Reformist-based sustainable development, the one which the business sector is currently advocating, not only dominates current sustainable world discourse but, as mentioned above, is the only sustainability discourse that is granted legitimacy in the political and commercial realm. The effect is that society is being consistently groomed by business and government to have no credible and accepted alternate to Reformism – humanity's future is being wagered on a single sustainability model that is itself challenging to accept as likely to ever deliver needed outcomes. Here lies a key role for business, that being for the business sector to itself grant legitimacy to Transformational approaches to a sustainable world, and encourage others in the broad public sphere – government included – to do the same. Perhaps then society can meaningfully direct its energies to more creative solutions to the sustainability problems we are facing and be more open and accepting of needed change.

References:

Adger, WN 2007, 'Ecological and Social Resilience', in *Handbook of Sustainable Development*, eds. G Atkinson, S Dietz & E Neumayer, Edward Elgar Publishing Limited, Cheltenham, UK, pp. 78-90.

Barry, B 2003, 'Sustainability and Intergenerational Justice (reproduced from "Theoria" 1997)', in *Environmental Ethics*, eds. A Light & H Rolston, Blackwell Publishers Ltd, Oxford, UK., pp. 487-499.

Beder, S 2002, *Global Spin: The Corporate Assault on Environmentalism*, Green Books Ltd., Devon, UK.

Bell, MM 2009, *An Invitation to Environmental Sociology*, Pine Forage Press, California, USA.

Blewitt, J 2008, *Understanding Sustainable Development*, Earthscan, London.

Brown, L 1995, 'Ecopsychology and the Environmental Revolution', in *Ecopsychology: Restoring the Earth, Healing the Mind*, eds. T Roszak, ME Gomes & AD Kanner, Sierra Club Books, Berkley, California, pp. xiiv-xvi.

Brown, L 2008, *Plan B 3.0*, W. W. Norton & Company Inc., New York.

Bruno, K & Karliner, J 2002, *Earthsummit.biz: The Corporate Takeover of Sustainable Development*, Food First Books, Oakland, California.

Cato, MS 2009, *Green Economics*, Earthscan, London.

Chertow, MR 2000, 'The IPAT Equation and Its Variants.', *Journal of Industrial Ecology*, vol. 4, no. 4, p. 13.

Clifton, D 2010a, 'Representing a Sustainable World - A Typology Approach', *Journal of Sustainable Development*, vol. 3, no. 2, June 2010, pp. 40-57.

Clifton, D 2010b, 'A Sustainable World - an Ecological Footprint and I=PAT Perspective', *Journal of the Asia-Pacific Centre for Environmental Accountability*, vol. 16, no. 2, June 2010, pp. 3-26.

Clifton, D & Amran, A 2010, 'The Stakeholder Approach: A Sustainability Perspective', *Journal of Business Ethics*, vol. 98, no. 1, pp. 121-136.

Daly, H & Farley, J 2004, *Ecological Economics: Principles and Applications*, Island Press, Washington.

Diesendorf, M 1997, 'Principles of Ecological Sustainability', in *Human Ecology, Human Economy*, eds. M Diesendorf & C Hamilton, Allen & Unwin, Sydney, pp. 64-97.

Douthwaite, R 1999, *The Growth Illusion*, The Lilliput Press, Dublin.

Dunphy, D, Griffiths, A & Benn, S 2003, *Organizational Change for Corporate Sustainability*, Rouledge, London.

Estes, RJ 1993, 'Towards Sustainable Development: From Theory to Praxis', *Social Development Issues*, vol. 15, no. 3, pp. 1-29.

Esty, DC & Winston, AS 2009, *Green to Gold*, John Wiley & Sons Inc, Hoboken, New Jersey.

Footprint Network 2008, *Ecological Footprint*, Footprint Network, viewed 1 August 2008, <http://www.footprintnetwork.org/>.

Footprint Network 2010a, *Ecological Footprint*, Footprint Network web site at http://www.footprintnetwork.org/.

Footprint Network 2009, *Ecological Footprint and Biocapacity 2006 data release (based on National Footprint Accounts 2009 edition).* Footprint Network.

Footprint Network 2010b, *Ecological Footprint and Biocapacity - 2010 release*, Footprint Network.

Gare, A 2000, 'The Postmodernism of Deep Ecology, the Deep Ecology of Postmodernism, and Grand Narratives.', in *Beneath the Surface: Critical Essays in the Philosophy of Deep Ecology*, eds. E Katz, A Light & S Rothenberg, MIT Press, Cambridge, Massachusetts.

Gibbs, D & Krueger, R 2005, 'Exploring local capacities for sustainable development', *Geoforum*, vol. 36, no. 4, 2005/7, pp. 407-409.

Gladwin, TN, Kennelly, JJ & Krause, T-S 1995, 'Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research.', *Academy of Management Review*, vol. 20, no. 4, 1995/10//, pp. 874-907.
Gould, KA & Lewis, TL 2009, 'The Paradoxes of Sustainable Development', in *Twenty Lessons in Environmental Sociology*, eds. KA Gould & TL Lewis, Oxford University Press, New York, pp. 269-289.
Gould, KA, Pellow, DN & Schnaiberg, A 2008, *The Treadmill of Production*, Paradigm Publishers, Boulder, Colorado USA.
Gunderson, L, Allen, CR & Holliday, C 2010, 'Commentrary on Part One Articles', in *Foundations of Ecological Resilience*, eds. L Gunderson, CR Allen & C Holliday, Island Press, Washington DC.
Hamilton, C & Denniss, R 2005, *Affluenza: When Too Much is Never Enough*, Allen & Unwin, Crows Nest, NSW.
Handmer, JW & Dovers, SR 1996, 'A Typology of Resilience: Rethinking Institutions for Sustainable Development', *Industrial and Environmental Crisis Quarterly*, vol. 9, no. 4, pp. 482-511.
Hargroves, K & Smith, MH 2006, *The Natural Advantage of Nations*, Earthscan, London.
Hart, S & Milstein, MB 2003, 'Creating Sustainable Value', *Academy of Management Executive*, vol. 17, no. 2, pp. 56-69.
Hart, SL 2007, *Capitalism at the Crossroads*, 2nd edn, Pearson Education, New Jersey.
Holdren, JP, Daily, GC & Ehrlich, PR 1995, *The Meaning of Sustainability: Biogeophysical Aspects*, United Nations University and The World Bank, Washington DC.
Holling, CS 1996, 'Engineering Resilience versus Ecological Resilience', in *Engineering Within Ecological Constraints*, ed. PC Schulze, National Academy Press, Washington, D.C., pp. 31-44.
Hughes, JD 2001, *An Environmental History of the World*, Routledge, New York.
IPCC 2010, *Intergovernmental Panel on Climate Change*, Intergovernmental Panel on Climate Change at http://www.ipcc.ch/.
Jickling, B 1994, 'Why I Don't Want My Children To Be Educated for Sustainable Development: Sustainable Belief', *The Trumpeter*, vol. 11, no. 3, pp. 2-8.
Kitzes, J 2007, 'A Research Agenda for Improving National Ecological Footprint Accounts', paper presented at the International Ecological Footprint Conference: Stepping Up the Pace - New Developments in Ecological Footprint Methodology, Policy and Practice, Cardiff, 8-10 May 2007.
Kitzes, J, Peller, A, Goldfinger, S & Wackernagel, M 2007, 'Current Methods for Calculating National Ecological Footprint Accounts', *Science for Environment & Sustainable Society*, vol. 4, no. 1.
Laferriere, E & Stoett, PJ (eds) 2006, *International EcoPolitical Theory: Critical Approaches*, UBC Press, Vancouver.
Manderson, AK 2006, 'A Systems Based Framework to Examine The Multi-Contextual Application of the Sustainability Concept', *Environment, Development and Sustainability*, vol. 8, pp. 85-97.
McDonough, W & Braungart, M 2002, *Cradle to Cradle: Remaking the Way we Make Things*, North Point Press, New York.
Meadows, DH, Randers, J & Meadows, D 2004, *Limits to Growth: The 30-Year Update*, Chelsea Green Publishing Company, White River Junction.
Mebratu, D 1998, 'Sustainability and Sustainable Development: Historical and Conceptual Review', *Environmental Impact Assessment Review*, vol. 18, no. 6, 1998/11, pp. 493-520.
Osorio, LA, Lobato, MO & Castillo, X 2005, 'Debates on Sustainable Development: Towards a Holistic View of Reality', *Environment, Development and Sustainability*, vol. 7, pp. 501-518.
Pezzoli, K 1997, 'Sustainable Development: A Transdisciplinary Overview of the Literature', *Journal of Environmental Planning and Management*, vol. 40, no. 5, pp. 549-574.

Polimeni, JM, Mayumi, K, Giampietro, M & Alcott, B 2009, *The Myth of Resource Efficiency*, Earthscan, London.
Princen, T 2005, *The Logic of Sufficiency*, MIT Press, Cambridge MA, USA.
Raiklin, E & Uyar, B 1996, 'On The Relativity of the Concepts of Needs, Wants, Scarcity, and Opportunity Cost', *International Journal of Social Economics*, vol. 23, no. 7, pp. 49-56.

Rees, WE 2008, 'Human Nature, Eco-footprints and Environmental Injustice', *Local Environment*, vol. 13, no. 8, December, pp. 685-701.
Rees, WE & Westra, L 2003, 'When Consumption Does Violence: Can There be Sustainability and Environmental Justice in a Resource-limited World?', in *Just Sustainabilities: Development in an Unequal World*, eds. J Agyeman, RD Bullard & B Evans, Earthscan, London.
Robinson, WI 2004, *A Theory of Global Capitalism*, The John Hopkins University Press, Baltimore, US.
Rockström, J, Steffen, W, Noone, K, Persson, A, Chapin, FS, Lambin, EF, Lenton, TM, Scheffer, M, Folke, C, Schellnhuber, HJ, Nykvist, B, de Wit, CA, Hughes, T, van der Leeuw, S, Rodhe, H, Sörlin, S, Snyder, PK, Costanza, R, Svedin, U, Falkenmark, M, Karlberg, L, Corell, RW, Fabry, VJ, Hansen, J, Walker, B, Liverman, D, Richardson, K, Crutzen, P & Foley, JA 2009, 'A Safe Operating Space for Humanity', *Nature*, vol. Vol 461, no. 24, September 2009, pp. 472-475.
Shiva, V 2005, *Earth Democracy*, South End Press, Cambridge, Massachusetts.
Speth, JG 2008, *The Bridge at the End of the World*, Yale University Press, London.
Speth, JG & Haas, PM 2006, *Global Environmental Governance*, Island Press, Washington DC.
U.S. Census Bureau 2011, *World Population Clock at http://www.census.gov/main/www/popclock.html*.
UN 2008, *Corporate Citizenship in the World Economy*, United Nations Global Compact, available at http://www.unglobalcompact.org/docs/news_events/8.1/GC_brochure_FINAL.pdf, New York.
UN 2007, *World Population Prospects - 2006 Revision*, United Nations - Department of Economic and Social Affairs, Population Division, New York.
UNEP 2009, *Climate Change Science Compendium*, United Nations Environment Programme, Nairobi.
UNEP 2007, *Global Environmental Outlook 4*, United Nations Environmental Programme, Nairobi, Kenya.
Victor, PA 2008, *Managing Without Growth*, Edward Elgar Publishing Limited, Cheltenham, UK.
Wackernagel, M, Kitzes, J, Moran, D, Goldfinger, S & Thomas, M 2006, 'The Ecological Footprint of Cities and Regions: Comparing Resource Availability with Resource Demand', *Environment and Urbanization*, vol. 18, no. 1, pp. 103-112.
Wackernagel, M, Monfredaa, C, Erbb, K-H, Haberlb, H & Schulzb, NB 2004, 'Ecological Footprint Time Series of Austria, the Philippines, and South Korea for 1961-1999: Comparing the Conventional Approach to an 'Actual Land Area' Approach', *Land Use Policy*, vol. 21, pp. 261-269.
Walker, B & Salt, D 2006, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*, Island Press, Washington DC.
WBCSD 2008, *The World Business Council for Sustainable Development - web site*, viewed 16 June 2008, <http://www.wbcsd.ch/templates/TemplateWBCSD5/layout.asp?type=p&MenuId=Njk&doOpen=1&ClickMenu=LeftMenu>.
WCED 1987, *Our Common Future: World Commission on Environment and Development*, Oxford University Press, Oxford.
Welford, R (ed.) 1997, *Hijacking Environmentalism*, Earthscan, London.

Williams, CC & Millington, AC 2004, 'The Diverse and Contested Meanings of Sustainable Development.', *Geographical Journal*, vol. 170, no. 2, 2004/06, pp. 99-104.
Wissenburg, M 2001, 'Dehierarachization and Sustainable Development in Liberal and Non-Liberal Societies.', *Global Environmental Politics*, vol. 1, no. 2, 2001/05, p. 95.
WRI 2010, *Earth Trends - Economics, Business and the Environment.*, World Resources Institute, at http://earthtrends.wri.org/searchable_db/index.php?theme=5, accessed 9 March 2010.
WWF 2007, *Europe 2007: Gross Domestic Product and Ecological Footprint*, World Wide Fund for Nature.
York, R, Rosa, EA & Dietz, T 2003, 'STIRPAT, IPAT and ImPACT: Analytic Tools for Unpacking the Driving Forces of Environmental Impacts', *Ecological Economics*, vol. 46, no. 3, 2003/10, pp. 351-365.