

The Necessary Paradigm Shift in Sustainable Business Practice

Part 1: The Framework

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Received: January 17, 2019

Accepted: February 7, 2019

Online Published: March 24, 2019

doi:10.5539/jms.v9n1p93

URL: <https://doi.org/10.5539/jms.v9n1p93>

Abstract

The historical prevailing paradigms or perceptions are implicit or explicit beliefs that mould our behaviour. Business takes these on in the same way as society. It is not surprising therefore that Management has behaved as if there was infinite resource availability and waste assimilation capacity in nature. Consequently, the loose relationship between economics and the environment, where business accepted one-to-one pollution control strategy supported by legislative controls is a direct consequence of this historical legacy. This dominates industrial thinking in relation to defining good sustainable business practice.

This paper reviews the perceptions that have arisen from these historical paradigms, “legacies of the past”, giving a reminder of the facts and truths that have somehow become lost in today’s thinking. It goes on to present the set of paradigms that have to be taken on board by corporate management if it is to construct a framework that will allow it to adopt strategic Sustainable Development policies.

Keywords: paradigm, perceptions, concentricity, corporate sustainability, policy framework

1. Introduction

Legacies of the past, particularly Bhopal in 1984, drew attention to environmental and corporate ethical issues for large corporate business organizations (Guerrette, 1986). By the beginning of the 21st century, it was evident that Global Business Organisations (GBO) was taking an ever increasing interest in the environmental constraint on their business progress (Rowledge et al., 1999; Natrass & Altomare, 1999; Welford, 2000). As well, regulators, insurers, financiers and stakeholders generally were all increasingly demanding evidence of environmental excellence. Delmas and Toffel (2004) describe how these stakeholders were imposing institutional pressures on production processing plants and their parent companies.

In addition, in the last decade, there has been growing demands on GBOs to demonstrate good corporate citizenship and leadership in sustainable development practices with many of the trends projected in the last decade coming to fruition (Davis & Stephen, 2006).

For business organizations the increasing irrelevance of national boundaries (Palmisano, 2006) and the development of their management systems have varied, but they all have had to be suitable for their multi-dimensional organizational structures. A review of the performance standards that have appeared in the previous 15-to-20 years (Sealy et al., 2010) suggested that some do provide a degree of guidance on either management system structure or policy content while others provide certification, verification or accreditation. In that review, although ISO14001 has achieved wide spread recognition, a series of limitations on its value for global business were identified from the literature.

By the beginning of this century Sustainable Development (SD) and Corporate Social Responsibility (CSR) had been taken up as relevant concepts of study in mainstream management publications (Kolk & van Tulder, 2010), and while many organisations acknowledge the importance of sustainability, an effective strategy remains elusive (Galpin et al., 2015)! As recent as 2018, Alshehhi, Nobanee & Khare in their excellent overview concluded that:

The problem with CSR is that it is mostly about the social element of sustainability, and little to nothing about environmental and economic dimensions.

And

... the literature, which is still struggling to establish a universal definition for corporate sustainability between the three competing dimensions of sustainability.

It is therefore crucial, as we are already approaching the end of this century's 2nd decade that a practical methodology that enables the full implementation of SD into CSR strategic planning going beyond the "complex nature of organisational culture" (Galpin et al., 2015) is forthcoming.

Over 18 years ago several conditions had been clearly identified as necessary to make the transition to sustainability possible for companies (Azapagic & Perdan, 2000).

Principles among them were:

- 1) To develop a proper definition and framework for sustainability in business practice.
- 2) To define an appropriate management toolkit to help achieve the transition necessary.
- 3) The need to de-couple economic growth from the negative effects on environmental resource use.

So, why is it not happening?

When the Tokyo declaration of the "Brundtland Report" (Our Common Future [OCF], 1987), talks about "a massive (paradigm) shift in social objectives" it advocates the breaking out of existing patterns.

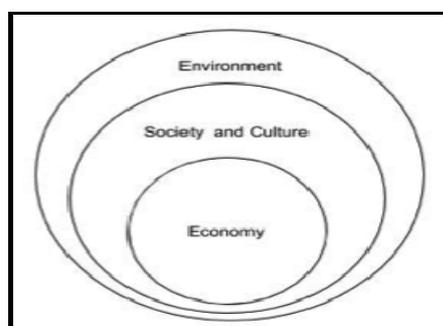
Unfortunately, this shift is a whole network of alternative perceptions and insights and in many cases are a reminder of facts and truths that have somehow become lost in today's thinking especially as the prevailing (historical) paradigms (perceptions) are implicit or explicit beliefs, which mould management behavior.

For the processing business they include:

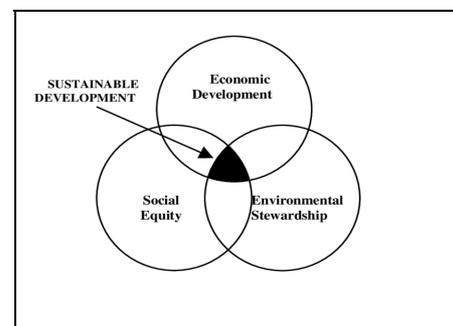
- 1) There are infinite resource availability and waste assimilation capabilities in nature.
- 2) The fact that with economics, environmental trade-off is always a reality.
- 3) There is a loose relationship between business and the environment, in which the business can be treated almost in isolation;
- 4) That one problem- one solution is a good pollution control strategy;
- 5) By adopting an eco-modernistic (Welford, 2000, p. 58) approach; things are substantially "on the right track".
- 6) The belief that environmental legislation is a sufficient control mechanism.
- 7) The fact that Triple Bottom Line (TBL), reporting is showing good SD/CSR (Slaper 2011).

Probably the biggest stumbling block for all companies has been the need to clarify the true meaning of SD.

Back at the beginning of the last decade, Mitchell (2000), reminded the Chemical Engineering Profession that they had to take on board the fact that SD was a concentricity principle (Figure 1a) and not a co-planer one (Figure 1b) as had been advocated earlier (Clift, 1998).



(a) Concentricity



(b) Co-planer

Figure 1. The conflicting views of sustainable development

Mitchell pointed out that Economics is constrained, firstly by Environmental and secondarily by Social limits. It is subservient to both in a sustainability context. In consequence, it is economics, which needs to be reconfigured to accommodate a higher reality when the three domains are considered together in business decision-making.

This means that trade-off (pt. 2) becomes questionable as a management mechanism for the attainment of sustainable development and sustainable development does not equate to TBL (pt. 7)

The required economic reconfiguration which involves the incorporation of binding environmental laws into economic mechanisms (Pearce & Turner, 1990) is happening slowly but surely. Measures to encourage material conservation and reuse (Mitchell, 2000) and the development of renewable energy alternatives (Hammond, 2000), are finding ever greater application. Yet all this is happening by default rather than by design. Hammond concluded that economics is still predominantly linear, rewarding processes and procedures (pts. 3 & 5), which is unsustainable.

Driven therefore by unsustainable economics and constrained by environmental laws, the process industry has resorted to trade-offs between environmental damage or social degradation (pt. 2) and economic gains. It is argued that this amount of environmental degradation or social inequity is “acceptable” (pt. 1) and this SD-TBL compromise has been adopted wholesale by the process industry.

Unfortunately, many higher educational teaching establishments have accepted this TBL approach within the academic curricula thereby exacerbating the problem further rather than challenging it (Boron et al., 2016).

Historically, much of today’s strategy to counteract environmental degradation is a “legacy from the past”. Problems such as acid rain, ozone depletion, and climate change emerged and were tackled on a one-to-one problem/solution basis so that both the list of environmental impacts in common use, and the ways of dealing with them have become the norm.

The most recent “problem” is a good example: the European governments, since the 1990’s have been encouraging drivers to buy diesel cars as an alternative to traditional petrol-powered vehicles. The rationale was: Diesel engines use fuel more efficiently, so the switch would reduce CO₂ emissions and thereby combat global warming.

Unfortunately, this attitude (pt. 4) has led to the present, problem-orientated approach to impact assessment (Table 1) and to the predominantly reactive, legislative pollution control strategies in use today (pt. 6) (Azapagic, 1999; Frischknecht et al., 2007) and the result is that this perception framework has and will continue to be a constant barrier to the adoption of SD.

Table 1. Life Cycle Assessment (LCA) project specific aspects

1	Global Warming	Greenhouse gases
2	Photochemical	Ozone Formation
3	Acidification	Nutrient enrichment
4	Eco-toxicity	Human Toxicity
5	Landfill	Waste
6	Resource use	Resource consumption

Governments, Policy makers, Businesses, will find it impossible to control or steer such a complex multifaceted system like Sustainable Development, by using only reactive (feedback) control loops; the reality being that the time-delays will be measured in several decades (Tolba, 2001).

So, an overall strategy based on proactive (feedforward) management, which sets a definitive course towards sustainable development objectives, has to be the way forward. This is not entirely new, for proactive management strategies (Robert, 2000) are finding ever-greater application in industry and these measures, with an emphasis on prevention, address such issues as unclosed material loops and unsustainable power generation (Peet, 1992).

Unfortunately, these will not ensure the long-term sustainability of a company because to simply seek the more sustainable (OCF, 1987) processing options without an absolute reference point i.e., Total Sustainability (TS) will not produce that. This is rather similar to the objective in Total Quality Management (Crosby, 1979) where “zero defects” was the reference point. “Zero resource availability infringements” is the absolute reference point for TS (Boron & Murray, 2004).

So, in summary, to be proactive, business has to be guided by a clear description of the salient features of sustainability and of the defining features of practical sustainable development, and to do this it is necessary for business to re-think the perceptions that are imbedded in the current management psyche and accept a new set of paradigms.

2. Constructing the New Paradigmatic Framework

2.1 Economic, Social and Environmental Inter-Relationship

All resources that are needed to make any economic system operate emanate from society and the environment. Violation of environmental constraints by the economic system operated by society produces pollution and or social insults and this has led to the obvious SD paradigm that these three domains are “concentric”, not co-planer (Mitchell, 2000). If any economic system is to be sustainable it has to operate within the environment and be completely dependent on environmental constraints that are in themselves “binding” laws of nature i.e., BATNEEC (Sorrell, 2002), BPEO (UK-DoE, 2002), IPPC (EU Dir. 61, 1996) are temporary stop-gaps, relieving environmental pressures.

The **first paradigm** to be acknowledged by SD business managers is: *that their economic operations are only “sustainable” if they do not undermine the social and environmental services that keep them going.*

2.2 Natural Limitations

Here it is possible to draw on the analysis succinctly presented in the first 3 conditions prescribed by the Natural Step (Nattrass & Altomare, 1999).

These “conditions” reiterate facts that businesses have rather ignore:

- Natural Systems have been round for a considerably long time!
- They use photosynthesis to drive natural processes creating structure and organization.
- In doing this all material quality is obtained from the energy quality with solar energy being the “infinite” source.

This **second paradigm** has to be part of the business psyche: *that, within a Total Sustainability Management Framework (TSMF), they make a conscientious effort to “plug-in” to the solar energy pathway in all their anthropogenic activities.*

Following on from the above, industrialists have to be reminded that natural systems and processes are essentially sustainable within themselves because they use solar energy pathways and make available material through the re-availability of their closed cycle loops. Natural Systems are self-regulating in population size; they cycle nutrients; the species succeed each other; and they are self-producing and self-maintaining (Van der Ryn, 2013, p. 78). Natural Systems have no waste.

This **third paradigm** which is already acknowledged but not necessarily taken into the overall management strategy with respect to SD is that: *any anthropogenic economic activity should in itself have zero waste.*

Finally, with respect to natural systems, the earth is finite and the basic laws of thermodynamics pertain to all our activities. This demands that an enterprise must appreciate that everything it does can and will exert some form of pressure on some aspect of society and or the environment.

Organizations have to accept that “natural resources” does not just relate to raw materials use or assimilative capacity. Eco-system integrity, bio-diversity, resource purification and recovery are all an integral part of a life-support system. Environmental economic accountability has to include these wider issues.

An organization therefore, has to be prepared to review and re-evaluate on a continuous basis “the way it carries out its business”, since many of the activities will have unseen or unknown side effects on the integrity of society or the environment at large (Pimentel et al., 2000).

A reluctant acceptance therefore of a **fourth paradigm** is that *a company must accept the reality that environmental sustainability criteria are not restricted to raw material use and assimilative capacity.*

2.3 Scientific Knowledge

If humanity has learnt anything over the centuries it is that we do not know everything!

The world is round, but many believed otherwise in the past (Russell, 1991).

In the 19th century there were many attempts at producing the perpetual motion engine and many people still need convincing that a man actually-landed on the moon almost 50 years ago (Smithsonian, 2010). The same

applies to well meaning scientific intervention for the betterment of humanity: from the hydroelectric dams to fracking; artificial pesticides to non-indigenous species or from endocrine disruptors to NO_x emissions. The truth is that science is limited in what it can give.

Many “facts” are mere hypotheses; just consider the heated debate that is still rumbling over the link between CO₂, global warming and climate stability (Carter, 2018).

With this realization many, within the intellectual decision-making community, profit from this “uncertainty”, even Presidents play on the “fact” that until there is irrefutable proof, business can continue within a “regulatory” boundary set by the “scientific knowledge of the day” (Perkins & Harrington, 2017). Unfortunately too in many local instances “indigenous knowledge or wisdom” is ignored when it comes to significant environmental impact (Berkes et al., 2000).

However, it is now almost a key requirement to apply the precautionary principle (EU Communication, 2000) to assessing “risk” when reviewing Clause 4.3.1 for ISO 14001 Environmental Management System accreditation.

So, for any organization taking a serious look at Total Sustainability Strategies this **fifth paradigm**: *uncertainty is a fact of life and the precautionary principle has to be applied where there is any doubt in the scientific data*, must be incorporated into the framework.

3. Framework Acceptance

From a business perspective “rewarding” throughput, profitability, and efficiency all encourage a linear view of a company operations. The “reward” is made manifest in economic terms encouraging consumption of “stuff” with its associated waste. This linear view is fundamentally unsustainable (Leonard, 2009).

Thus, any organization has to recognize and accept an almost impossible reality that *the present economic reward system is unsustainable and a new structure has to be created in which the economic system is informed and constrained by environmental principles*.

Accepting this **6th paradigm** along with the other five, summarized in Table 1, sustainable economic growth can flourish under the overarching fundamental principle that Total Sustainability (TS) demands that there is no undermining (“negative side effects” Figure 2) of resource availability either environmental or social in any of the processes or systems that are in place in supplying welfare to the population or the individual.

It is within this new paradigm framework that companies must now develop and apply a procedure within their existing Management Systems which allows them to adopt them (the paradigms) within the overarching TS principle and armed with an absolute sustainability ceiling, sustainable development can then be put into practice or operationalised in a deliberate and consistent manner.

Revisiting the original SD statement (OCF 1987) and clarifying its true meaning when applied to Businesses the paradigm shift in SD management practice is explored in Part 2: *Beyond the Triple Bottom Line*.

4. Conclusions

Having clarified that SD is not co-planar from a company perspective and TBL is failing in respect to the longevity of an organization, a new paradigm framework must be adopted, if company sustainability (capacity for continuance) is to be achieved. It involves all elements on how the company interacts with and/or undermines the human, natural, manufactured resources and market place it relies on.

In summary

- Historical perceptions have made it impossible for business to adopt Sustainable Development in practice.
- A range of existing paradigms has to be dislodged before any enterprise can develop a sustainability strategy.
- The triple bottom line is a misnomer; the economic domain is subservient to the social domain that is in turn underpinned by the environmental.
- For total sustainability strategy to be adopted, the environmental targets of closed material loops and fossil fuel consumption elimination are clear objectives.
- In adopting a total sustainability strategy, a company has not to restrict its vision to just material usage and assimilative capacity.

- Sustainable economic growth can continue if there is no undermining of resource availability, either social or environmental in the processes or systems that are in place supplying welfare to the population or the individual.
- For society to achieve “maximum welfare” in which it receives continuously its fundamental needs satisfaction it has to have in place a set of processes or systems which in themselves are able to supply this forever.
- Sustainability is a property of the process or system that supplies this welfare.
- An enterprise, wherever it sits within the process or system that supplies this welfare must, if it is to achieve total sustainability, accept the fundamental principle that: *there is no undermining of resource availability either environmental or social in any of the processes or systems it has in place in supplying welfare to the population or the individual.*

Table 2. The business paradigm framework for total sustainability

Paradigm	Description
1	The business operations are only “sustainable” if they do not undermine the social and natural services that keep them going.
2	All business activities have to make a conscientious effort to “plug-in” to the solar energy pathway.
3	Any business activity should in itself have zero waste.
4	Resources are not restricted to raw materials and assimilative capacity.
5	The precautionary principle has to be applied where there is doubt in scientific data.
6	The economic system has to actively encourage sustainability in business.

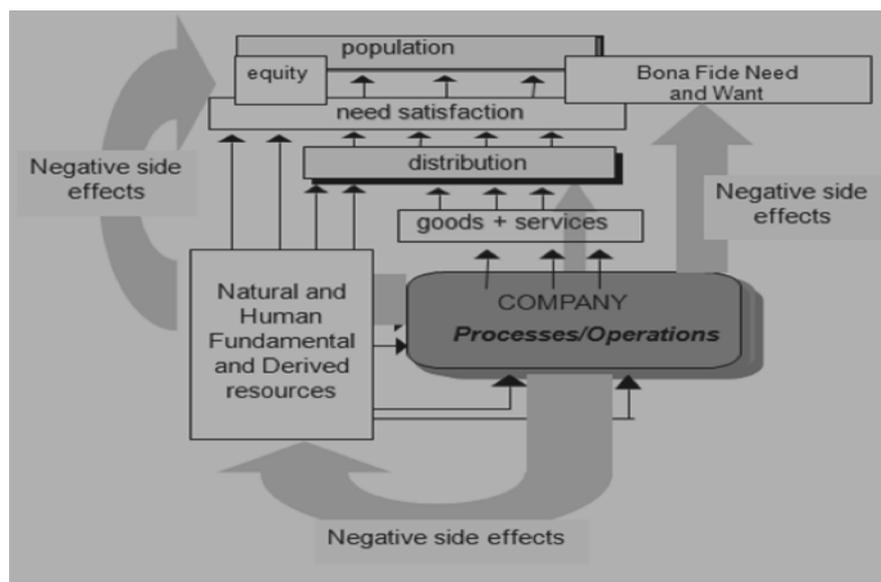


Figure 2. Company’s un-sustainable “negative” side effects (Boron & Murray 2004) modified

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