Sustainability Theory: Synopsis, Concepts, Interpretations and Discourses

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Abstract

Unlike the 21st century sustainability challenges, the counter concepts, sustainability and sustainable development (SD), have been clouded by nebulousness. It is against this background that this review set-out to explore conceptual relationship between sustainability and SD; sustainability interpretations; and, SD discourses including their implications. They were explored through review of related existing literature. This was ultimately aimed at providing a comprehensive foundation for future sustainability studies in relation to context, interpretations and discourses in sustainability theory. The findings revealed that sustainability is the desired state of continued human life sustenance with SD being the means of achieving the said state. Additionally, two sustainability interpretation viewpoints were identified: extent of capital forms substitutability – radical, social democratic, liberal and neoliberal; and man-earth dominance – ecocentrism and anthropocentrism. Lastly, the consequent SD discourses identified were limits – premised on planetary carrying capacity; change – based on need for change to counter critical natural resources depletion; and, integration – premised on joint environmental and socio-economic consciousness. The above highlight the need for specificity on sustainability interpretation and SD discourses adopted in research for: enhanced clarity; and, curbing terminological misapplication and/or simplification. Additionally, the study recommends continued debate around the subject for continuous improvement of the knowledge advanced herein.

***Keywords*: Sustainability, Sustainable Development, Capital Forms Substitutability, Ecocentrism, Anthropocentrism, Sustainable Development Discourses**

Introduction

The 21st Century has been faced by some unique challenges. It is evident that the global population has been continuously increasing in size, with an increasing proportion of old people and has over time increasingly tended towards urbanization. This increase in population has in turn led to increased demand on already limited natural resources owing to largely unchecked consumption over time tipping the man-environment balance detrimentally. The climate has also changed due to a combination of increased demand for more natural resources, consumption of fossil fuels and pollution (air, land and water) amongst other factors (Allen & Macomber, 2020; Samways, 2022:35-36). It has also been noted that governments (national/federal and county/local) have been heavily burdened by these changes. It is in this realization that the role of private sector in complimenting public sector efforts is highlighted (Fukuyama, 2016; Allen & Macomber, 2020). It is also worth noting that scope definition of health has changed from just absence of disease to overall physical, mental and social wellness. Consequently, the built facilities (social, business, education, religious and recreational) are increasingly required to support overall wellness of their users (Allen & Macomber, 2020).

There has also been a change in the way people work. Now more than ever, there is a substantial global workforce of freelance, temporal, working from home or flexible time nature. In ensuring their overall wellbeing, this has called for user experience centred design of workplaces for optimum productivity. It is also undeniable that technological changes have heavily influenced most aspects of life. This has allowed for a shift from a largely qualitative to a largely quantitative means of ensuring sustainability consciousness of almost all human endeavours. This is evident in smart wearables, appliances, building management systems and cities over the world. Lastly, for business enterprises, change in values has also been observed. The market focus/demand has shifted from just economic welfare (stakeholder primacy) to include positive environmental and social contributions (Allen & Macomber 2020). All these major changes, if not addressed threaten not only our sustenance but also that of future generations. As such they frame the sustainability focus of 21st Century moving forward and should be at the centre of all major decisions made. At the core of these changes are traditional approaches that did not have much potential specifically in the long run hence the need for a shift.

These changes specifically in developing countries, such as Kenya, have been attributed to some of the pressing needs currently. These include but are not limited to increased population density, housing deficit, growth of informal settlements, inability of governments (national and local) to deliver on basic services such as accessible and affordable education and healthcare, unbridled urbanization and increased difficulty to meet basic needs, such as food, by the general populace (Du Pisani, 2006:91). This in addition to the direct adverse negative impact of some of the changes. For example, rise in ocean levels will lead to displacement of people living in low lying coastal areas, air pollution will acidic rain and its effects, general pollution (land, air and water) will lead to illnesses such as respiratory diseases and increased heavy precipitation instances will lead to displacement and in some cases death of people. All these impacts are a serious threat to human life and require immediate action (s) of both short term and long-term nature (Tvaronavičienė, 2021:2-5).

In light of all these negative impacts, ensuring and maintaining capital (manufactured, human, social, knowledge/intellectual and natural) stocks, in the right mixes, would guarantee

sustenance of human life now (in context of economic, environmental and social shocks) and ultimately in future. Manufactured capital stocks include industrial and financial systems such as built facilities (product, transport and business) and stock exchange. Elements of human capital relate to matters literacy (mastery of knowledge and skills), physical well-being and populace. Social capital stocks relate to institutional, organizational, and interactional dispositions. Intellectual capital components include but are not limited to skills mastery, technical know-hows and scientific realizations. Lastly, natural capital relates to natural resources stocks. This conceptualization is based on the realization that for human life sustenance, and as argued by Solow (1991), welfare must be ensured, seen through economic, environmental and social shocks (resilience) in the short term and in the long-run. This view centralizes human well-being as the ultimate state in the long-term and sustainability in the short-term as being ensured through resilience to economic, environmental and social shocks (Laurent, 2018).

As postulated by Huge *et al.* (2012), the economic, environmental and social crises, also referred to as global mega-challenges by Carboni *et al.* (2018), occasioned by human activities are a reality and clear to all but the interpretation of the concept that addresses them, sustainable development (SD), is contested. Huge *et al.* (2012) continues that many interpretations exist reflecting particular world views. These different interpretations as shared by particular groups of people give rise to conceptual generalizations also known as discourses or debates. Whereas on the one hand it has been argued that the various interpretations lead to constructive nebulousness (Robinson, 2004; Teal, 2010), on the other, it has been postulated that it gives room for terminological misapplication (Bosshard, 2000) and/or inadvertent simplification (Teal, 2010). According to Huge *et al.* (2012), the determination as to how sustainable an endeavour is, is highly dependent on the interpretation of sustainability adopted. This is owing to the existence of different viewpoints with some being more dominant than others. It is this realization that drove the need to review the various existing debates on interpretation of sustainability and SD.

Specifically, this review was guided by the following research questions through critical review of literature:

a) **What is the conceptual relationship between sustainability and SD?**
b) **What are the main interpretations approaches to sustainability?**
c) **What are the main discourses on SD including their implications?**

This was ultimately aimed at providing a comprehensive theoretical foundation for future sustainability studies in relation to concepts, interpretations and discourses in sustainability theory.

Literature Review and Discussion

a) Sustainability and Sustainable Development

Existence of human beings, both now and in the future, is the heart and soul of the sustainability agenda globally (Huge *et al.*, 2012; Carboni *et al.*, 2018). According to Du Plessis (2002), sustainability in its broadest view can be defined as a state that allows continued existence of human life. To achieve this state, the following are required on an intra and extra-generational basis: equity; meeting societal needs in an acceptable manner; balance between these needs and the earth's carrying capacity; and, prosperity.

Sustainable development (SD) on the other hand emerges as continuous dynamic process of ensuring human life sustenance (meeting the requirements to achieve a state of sustainability). Du Plessis (ibid) further emphasized that SD should not be seen as human development that can be sustained but rather as development that is needed to ensure sustainability. This line of thought presents a departure from the conceptualization of sustainability and SD as synonymous and thus interchangeable, as postulated by Murray & Cotgrave (2007), Huge *et al.* (2011) and Holland (2017), to being two different concepts. As such, sustainability emerges to be the goal and SD the means of achieving that goal.

The focus of sustainability/SD has changed with the evolution of civilizations. According to Xiaoying (2013), sustainability concerns can be traced back to the Agrarian Age (Before mid-18th Century). This age was characterized by heavy reliance on natural resources and basic tools (Lu, 2016). During this age, human activities, such as logging, mining, and farming, were associated with the negative impacts such as loss of soil fertility and deforestation which led to early concerns on human life sustenance (Van Zon, 2002). Next came the Industrial Age (Mid-18th – early 20th Century) characterized by development of natural resources, such as metals and fossil fuels, and introduction of mechanization (Lu, 2016). In this age, the impact of population growth on resources consumption, unlimited extraction of fossil fuels and forests exploitation were some of the main areas of concern (Du Pisani, 2006; Van Zon, 2002). Lastly, Networked Knowledge Age (From the late 20th Century onwards) has been largely characterized by knowledge, information technology and globalization (Lu, 2016). The focus has been on uncontrolled population growth, pollution, depletion of natural resources, widening wealth-gap, industrialization impacts and consumerism (Von Wright, 1997; Du Pisani, 2006).

Sustainability, in a broad sense, has emerged as an approach to ensure long-term sustenance of human life in context of universal mega-challenges such as changing climates, populations, technology and resources (Carboni *et al.*, 2018; Ives *et al.*, 2019). Murray & Cotgrave (2007) and Holland (2017) postulate that the terms sustainability and SD can be used interchangeably. On the other hand, Du Plessis (2002), postulates they are two different concepts which is the viewpoint adopted by this study. This is based on the line of thought advanced by Du Plessis (ibid) as previously highlighted. Sustainability, as a concept, has been postulated as being complex and with multiple of values – meanings and appeals (Solow, 1991; Faber *et al.*, 2005; Medovoi, 2017). Brundtland Commission took an equity (a generational) perspective and described SD as development that ensures equity within the present generation populace while at the same time ensuring it is not at the expense of future generations populace (WCED, 1987). Solow (1991), in an economic perspective, argued that goods and services can be substituted for each other and thus the general obligation of the present generation is to ensure future generations have the capacity for well-being as opposed to trying to necessarily maintaining the status quo.

b) Sustainability Ideologies

The interpretation of sustainability can be approached from two main ideological viewpoints: extent of capital forms substitutability; and, man – earth dominance (Davidson, 2011; Wilkinson, 2016) as discussed in detail below. Huge *et al.* (2012) postulate that these viewpoints inform conceptual generalizations known as discourses as

introduced in the preceding section and discussed in detail later in this study.

Capital Forms Substitutability Viewpoint

Primarily dependent on the degree of substitution of forms for capital, Davidson (2011) discussed four perspectives in order of decreasing sustainability, as: radical; social-democratic; liberal; and, neoliberal. McManus (1996) postulates that radical interpretation advocates for greater extent conservation of vital natural stock as key to human life sustenance. Additionally, a social-democratic interpretation adopts a similar perspective but not as strict on key natural resources preservation. These two orientations take a largely non-substitution viewpoint of key natural capital. On the flip side, there lies the liberal and neoliberal interpretations. The neoliberal approach postulates that to a large extent human and intellectual (mainly technological) capital forms will overcome challenges imposed by limits to exploitation of natural resources. The liberal approach is of the position that critical capital forms are substitutable but to a lesser extent compared to the neoliberal way of thinking. These two approaches take a largely pro-substitution viewpoint of key capital forms. These sustainability interpretation perspectives, are illustrated as a continuum from one extreme to the other in Figure 1 below:

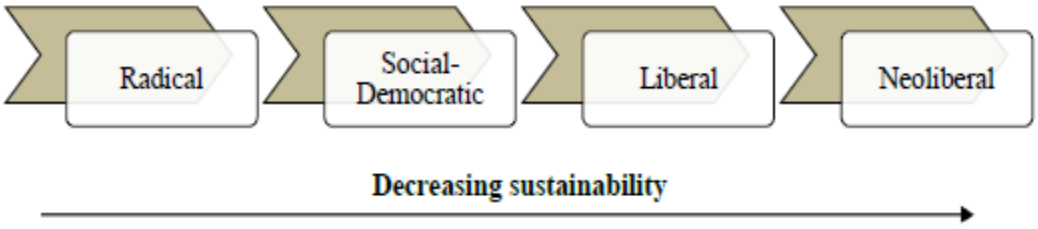


Figure 1: Sustainability Interpretations Based on Capital Forms Substitutability Viewpoint

Source: Developed by the Authors

Man-Earth Dominance Viewpoint

From a man-earth dominance perspective, the two opposing sides, in order of decreasing sustainability, are: ecocentrism; and, anthropocentrism or techno-centrism (Wilkinson, 2016). Anthropocentrism/techno-centrism is of the position that human beings are the most consequential species and dominate the rest of nature (Washington, 2015). On one end, of comparatively high sustainability, of this position is accommodating environmentalism. It takes a resources conservation view, based on a belief system of faith in science and technology and calls for controlled growth. On the other end it has the cornucopian environmentalism. This position takes a resources exploitation view, based on a belief system of rational resource use and calls for maximized growth. Ecocentrism advocates are of the view that all living organisms and their natural environments are significant irrespective of their perceived value to human beings. In this viewpoint, there are 3 sub-viewpoints (in order of decreasing sustainability): transpersonal; deep; and, moderate ecology. Transpersonal ecology is based on religious beliefs, does not believe in science and technology and views capitalism as not sustainable. Deep ecology is a rational version of transpersonal ecology based on ethics and value. Lastly, moderate ecology is a rational position based on value of ecosystems, conscious of earths carrying capacity and is also of the

position that capitalism is not sustainable (Wilkinson, 2016:99-101). These interpretation perspectives are as illustrated in Figure 2 below:

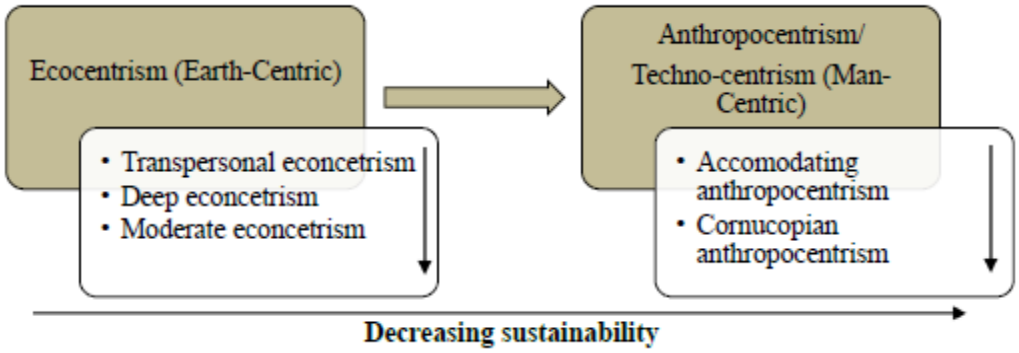


Figure 2: Sustainability Interpretations Based on Man-Earth Dominance Viewpoint

Source: Developed by the Authors

c) SD Discourses

Additionally, there are a number of SD discourses each with a unique emphasis based on the interpretation of sustainability adopted as previously discussed. Discourses can also be referred to as conceptualizations, debates or typologies. This review adopts three main discourses as advanced by Huge *et al.* (2012): limits; integration; and, change. This is based on the fact that the said proposition advances earlier. SD sub-discourses into three main discourses thus drawing from the individual expertise and at the same time minimising weakness that went into shaping the various sub-discourses. This was ultimately aimed at understanding the thematic areas of the various SD discourses which would then inform the option adopted for a given study and the reasons thereof. These three discourses are discussed, and illustrated in Figure 3 next page:

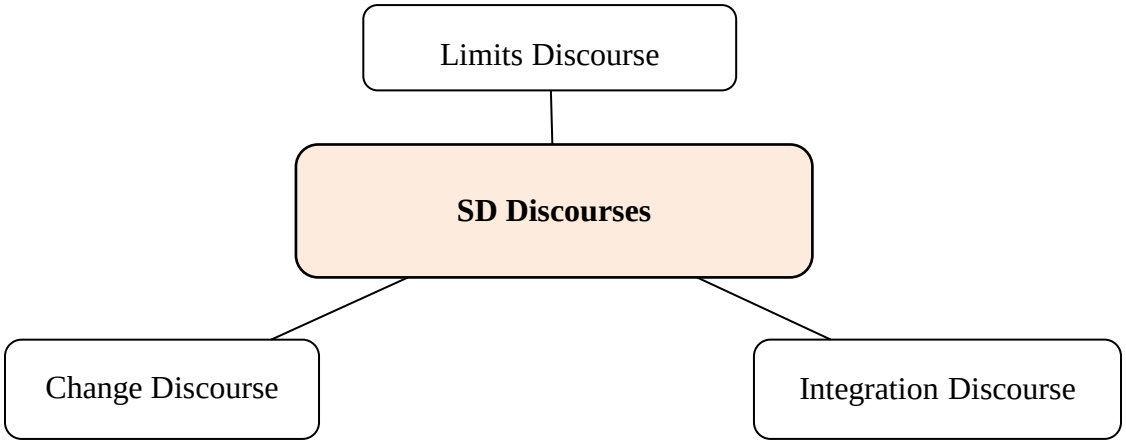


Figure 3: SD Discourses

Source: Developed by the Authors

Limits Discourse

The limits perspective is about relationship between man and nature within the context of limitations (Huge *et al.*, 2012). It is based on the premise that earth's carrying capacity is limited and hence the implied need to ensure anthropogenic development does not exceed the planetary limits (Meadows *et al.*, 1972, Huge *et al.*, 2012). Specifically, this discourse emphasizes that part of the earth's natural stock cannot be substituted and as such should be conserved (Neumayer, 2003). Based on the capital form substitutability, this perspective tends towards a radical approach: greater extent conservation of vital natural stock as key to human life sustenance. From a man-earth dominance viewpoint, as advanced by Huge *et al.* (2012), it assumes an earth-centric approach – ecocentrism. Consequently, on one extreme this discourse is based on religious beliefs and on the other extreme based on value of ecosystems, considerate of earths carrying capacity and is also of the position that capitalism is not sustainable. SD is thus seen as development within the planetary spatial carrying capacity. As such human activities are limited to the extent of substitutable planetary critical natural capital.

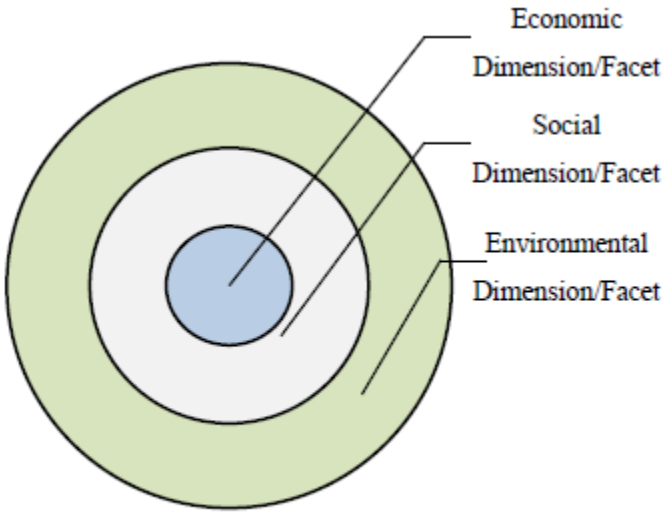
Change Discourse

The change perspective is based on the premise that SD is a change process as opposed to a fixed state (Huge *et al.*, 2012). It is about a shift from unsustainable modes of production and consumption towards more sustainable comparatives informed by the need to check irreversible depletion of planetary natural stock (Hardi, 2007). Based on the capital form substitutability interpretational approach, this perspective tends towards radical and social-democratic approaches: emphasizing on stopping and/or reducing irreversible depletion of critical natural stocks. From a man-earth dominance viewpoint, and similar to the limit's perspective, it assumes an earth-centric approach – ecocentrism – ranging from transpersonal to moderate ecocentrism as discussed above. As such, SD emerges as a process focused on changing the course of human activities towards comparatively sustainable alternatives: Sustainability Transition (ST). Consequently,

human activities are limited to the extent to which they begin to threaten depletion of critical natural resources. Additionally, as postulated by Rotmans & Van Asselt (2001), this discourse emphasizes on the role of networking and governance in realization of the desired change.

Integration Discourse

Lastly, the integrative discourse is of the view that economic, environmental and social aspects are overarching in sustainable development. This is as postulated by Joseph (2019:22) and Cotgrave & Riley (2013:4) as cited in Dania (2016:18) and as illustrated in Figure 4 next page. This integration should be: of economic, environmental and social aspects; across temporal and spatial scales; across disciplines; and, across sectors (Robinson, 2004:378). This perspective is not explicit in regards to capital form substitutability approach. From a man-earth dominance viewpoint it tends to assume an earth-centric approach in the sense that environmental dimension houses the social which in turn houses the economic dimension. As such, SD emerges as a process integrating economic, environmental and social aspects of development geared towards continued human life sustenance. Consequently, human activities are limited to the extent to which development is cognisant of environmental, social and economic facets of development. In a nutshell, this is a reform-oriented non-adversarial approach accommodating different interests (Hajer & Fischer, 1999). This has been postulated to accommodate different interpretations while at the same time proposing custom-made sustainability solutions to specific scenarios (Van Zeijl-Rozema *et al.*, 2008).



The nesting of the three dimensions indicates their relationship as discussed in Joseph (2019:22) and Esezobor (2016:18)

Figure 4: Integration Discourse

Source: Developed by the Authors

Conclusion

This review firstly sought to explore conceptual relationship between sustainability and SD. Sustainability emerges to be a desired state of long-term sustenance of human life in context of global mega-challenges such as changing climate. The dynamic process aimed at achieving this state has been identified as sustainable development (SD). It involves measures aimed at:

ensuring equity; acceptably meeting social needs; maintaining a balance between these needs and planetary carrying capacity; and, facilitating prosperity both intra and extra-generationally. Consequently, sustainability and SD appear to not be synonymous as previously postulated. Specifically, their conceptual relationship emerges to be: sustainability as the desired state, for continued human life sustenance (goal); and, with SD being the means of achieving the said state (process of achieving the goal). The sustainability, and consequently SD, agenda for this century has been identified to be uncontrolled: population growth; pollution; depletion of natural resources; widening wealth-gap; industrialization impacts; and, consumerism.

This review had also set-out to investigate the main interpretations approaches to sustainability. Two main viewpoints were identified: capital forms substitutability; and, man-earth dominance. The capital forms substitutability viewpoint is primarily based on the extent to which critical natural stock is substitutable. It has four key interpretations, in order of decreasing sustainability: radical and social-democratic – to the effect that critical natural resources are not and are to a small extent substitutable respectively; and, liberal and neoliberal – to the effect that human and intellectual capital will to a limited extent and largely overcome limits to exploitation of natural resources respectively. On the man-earth dominance viewpoint, there are two main interpretations, in order of decreasing sustainability: earth-centric (ecocentrism) – with sub-categories whose effect range from faith to carrying capacity-based resources conservation; and, man-centric (anthropocentrism) – with sub-categories whose effect range from faith in science and technology to rational use-based resources conservation.

Lastly, it also set-out to explore the main discourses on SD including their implications. Informed and critical review of existing and accessible sustainability literature revealed three main discourses: limits; change; and integration. These are the three main sustainability debates whose basis can be traced to the various sustainability interpretations. The limits discourse is of the view that earth's carrying capacity is limited and as such human activities are limited to the extent of substitutable planetary critical natural capital. For the change perspective, SD is a change process and anthropogenic development should change for better from the point to which they begin to threaten depletion of critical natural resources. Lastly, the integration perspective is to that effect that SD involves integration of the three pillars of sustainability (economic, environmental and social) across spatial and temporal scales, sectors and disciplines. Consequently, human activities are limited to the extent to which development is cognisant of environmental, social and economic facets of development.

Recommendations

Given the conceptual difference between sustainability and SD, various sustainability interpretations, the consequent SD discourses and associated implications, there is need for specificity in sustainability research. For clarity of the intended/desired sustainability state and means thereof, SD, in a given context, there is need for specificity on: adopted sustainability interpretation (s); and consequent SD discourse (s) including reasons thereof. Additionally, this will curb terminological misapplication and/or inadvertent simplification which have been identified as some of the outcomes of multiplicity of interpretations. Additionally, this review recommends continued debate around the subject. This is meant to ensure: enhanced clarity; and further development of knowledge advanced in this review. The first author, for example, is conducting doctoral research on sustainability transition modelling for the Kenyan construction industry and, in addition to this review, has with reasons outlined the adopted sustainability interpretation and SD discourse adopted.

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