

Sustainable development: the Nexus of Environmental Sustainability, Values, and Ethics

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Abstract

The paper seeks to redesign the disciplines of sustainable development by establishing a new ethical-ecological order based on value pluralism and environmental ethics. The argument begins with identifying the failure of the Brundtland Report in addressing the fundamental premise for sustainability which is the need to adopt non-anthropocentric attitudes towards nature. It then moves for restoring an ethical human relationship with the non-human natural world. Citing empirical evidence from research conducted in the forests of Borneo, the paper concludes that for sustainable development to be a useful concept, it must embrace the ethical dimension of sustainability rather than merely targeting its classical aim of meeting “the needs of the present without compromising the ability of future generations to meet their own needs”.

Key words: Brundtland Report, intergenerational equity, environmental sustainability, environmental ethics

1. Introduction

Exactly 29 years have passed since the publication of the Brundtland Report in 1987 which called on the international community to promote a new era of growth that is socially and environmentally sustainable. The Report had lasting influence on the international environmental agenda with its concept of sustainable development which underlies the need to protect the natural resource base and environment in order to ensure sustainable development. Since then, environment and development have remained inseparable in the international agenda of sustainable development.

However, the state of our planet has hardly improved. Old environmental problems such as climate change, deforestation, biodiversity loss have in fact worsened and new environmental threats such as mass species extinction is looming. As environmental situations across the globe become increasingly worrying, the integration of environmental sustainability into development discourse has now turned into the biggest single challenge confronting the world today.

This paper addresses this challenge by re-examining the concept of sustainable development in relation to the fundamental obstacle that hinders a genuine adoption of environmental sustainability into development discourse. It argues that while Brundtland offered a new vision of growth reconciling the conflicting interests of economic growth and environmental sustainability, it has failed to provide an ethical platform to articulate effective environmental protection while promoting growth, making it still sound hollow

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until today. It further argues that the ultimate test of sustainability in achieving profound environmental consequence is whether it changes the anthropocentric view of nature to the adoption of non-anthropocentric ethical behaviours at both the individual and institutional levels.

Drawing from the concepts of value pluralism and environmental ethics, the article demonstrates that such behavioural change hinges on the restoration of an ethical human relationship with the non-human natural world. This argument is further verified with empirical evidence gathered from a 5-year field research conducted in the forest interiors in the Borneo state of Sarawak in Malaysia. It is concluded that for sustainable development to become a useful concept, a set of ethical principles must be embraced that constrains human anthropocentric behaviour in the use of our environment.

2. The Brundtland road to sustainable development/environmental sustainability

Before presenting the argument, it is appropriate to define the various terms used in the present analysis. Within the present context, environmental sustainability is defined as “the balance in sustaining the ecological integrity of the ecosystem while optimizing the economic use of nature to promote economic growth and satisfying human needs” (Choy, 2015, p.2). This definition refers to responsible decisions and actions when interacting with the natural environment that seriously consider preserving the ecological integrity of the natural system.

Environmental sustainability assumes explicit recognition of biophysical limits of the ecosystem or the capacity of the biosphere to provide essential environmental services such as the maintenance of genetic diversity, the provision of clean air and water, climate regulation and nutrient cycling, among others (Jacobs, 1999). Observing these limits calls for the need to maintain the ecological integrity of the ecosystem. Ecological integrity may be expressed in terms of the Holling concept of ecological stability and resilience. The term “stability” refers to the ability of an ecosystem to maintain its viable level of regeneration in the presence of ecological perturbation as in the case of exposure to human influence. Resiliency refers to the ability of the system to retain its organizational structure in the face of external shocks or pressure arising from human economic activities (Holling, 1986).

The Brundtland Report or *Our Common Future* published by the World Commission on Environment and Development in 1987 may be regarded as a green effort to crystallize the conservationist thinking in early environmental sustainability literature such as three landmark publications, namely, *Limits to Growth* (Meadow et al., 1972), *A Blueprint for Survival* (The Ecologist, 1972) and *Small is Beautiful* (Schumacher, 1973). In the sphere of environmental conservation policy, the Report is considered an ideological document that summarized and conceptualized major ecological strategies emerging during the green decades of the 1960s and 1970s. These include the Common Heritage of All Mankind first introduced in the 1960s, Man and the Biosphere Programme (1971), the World Heritage (1972), World Conservation Strategy (1980), the World Charter for Nature (1982), and “eco-development”, a major theme of discussion at the United Nations Conference on the Human Environment (the Stockholm Conference) held in 1972 (Larsson, 1999).

The Brundtland Report popularized the concept of sustainable development which was formally introduced in the World Conservation Strategy. Defining sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their needs”, the report emphasized intergenerational equity and protecting the natural resource base and the natural environment while promoting economic growth.¹ The Report placed the environment in the political context and generated the momentum needed for advancing sustainable development, particularly environmentally sustainable development, worldwide.

To articulate how the Brundtland vision of environmentalism may be achieved across the globe, the United Nations convened the trendsetting global conference, the Rio Earth Summit in 1992 which led to the adoption of the following five crucial documents to commit the world to promoting sustainable development:

- (i) The Rio Declaration and Development—a programme of action which spelt out 27 guiding principles for the management of natural resources and environment
- (ii) Agenda 21—a 40-chapter and 800-page agreement that laid down 115 specific programmes to help achieve sustainable development
- (iii) Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests—a brief document containing 15 principles to guide the management, conservation and sustainable development of all types of forests
- (iv) The United Nations Framework Convention on Climate Change (UNFCCC)—an international treaty for global cooperation to combat climate change by limiting the emission of greenhouse gases
- (v) Convention on Biological Diversity (CBD)—a legally binding multilateral agreement with three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. Its overall aim is to protect the diversity of species and habitats in the world

Among these, Agenda 21 is considered one of the most important documents of the Rio Earth Summit as it provides a blueprint for achieving sustainable development worldwide. Indeed, following the summit, most countries created new coordinating environmental and development mechanisms and drew up their Local Agenda 21 documents and action plans for promoting sustainable development.

The Convention on Biological Diversity served as an important document to help address very complex global ecological degradation issues. The document led to the adoption of a more targeted treaty in 2000 to supplement the CBD, known as the Cartagena Protocol on Biosafety, effective from 2003. The treaty aims to protect biodiversity from the potential risks posed by living modified organisms (LMOs) resulting from modern biotechnology. In general, each party to the Convention is obliged to sustainably manage and conserve its own biological diversity. In this

¹ It is noteworthy that sustainable development as used in the World Conservation Strategy is more concerned about ecological sustainability and less concerned about economic growth while the Brundtland concept of sustainable development aims to reconcile both while promoting social equity.

connection, it is noteworthy that Agenda 21, and particularly the Forest Principle noted above, acknowledged for the first time the important role of forests and expressed the need for their sustainable management (Dine, 2012).

Since the Rio Earth Summit, various conferences have been convened by the United Nations to review and to reinforce international commitment to sustainable development. These include the following:

- (i) Johannesburg World Summit on Sustainable Development (WSSD) held in 2002 to review the progress made towards the aims set out in Agenda 21
- (ii) World Summit held in 2005
- (iii) The tenth Conference of the Parties (COP 10) of the Convention on Biological Diversity (CBD) held in 2010
- (iv) The United Nations Convention on Biological Diversity (UNCBD) held in 2012
- (v) Rio+20 Summit held in 2012

The UNFCCC came into force on 21 March 1994, followed by the first Conference of the Parties (COP1) in Berlin, Germany, bringing the international community to a roundtable of negotiations to strengthen global commitment to mitigate climate change. This led to the declaration of the Berlin Mandate which committed industrialized nations through legally binding obligations to reduce greenhouse gas emissions, while exempting developing countries. The Mandate led to the adoption of the Kyoto Protocol at COP 3 held in 1997. The Protocol legally binds developed country parties to stabilize greenhouse gases (GHG) emission standards and the detailed rules for the implementation of the protocol were adopted at COP 7 held in Marrakesh in 2001, known as the Marrakesh Accord.

Under the Protocol, industrialized countries were committed to reduce their GHG emissions by 5.2 percent below 1990 levels (22.7 billion tonnes) in the first commitment phase from 2008-2012. The second commitment phase from 2013 to 2020, known as the Doha Amendment to the Kyoto Protocol, adopted in 2012, committed parties to reduce their GHG emissions by at least 18 percent below 1990 levels. To date, 25 conventions (COP1-COP25) have been held between 1995 and 2015 by the UNFCCC to make progress in international negotiations for global coordinated efforts to reduce GHG emissions especially in the developing nations.

Hundreds of documents, declarations, bilateral and international industry-based agreements were adopted at these conferences to renew political commitment and support for sustainable development and to reinforce and accelerate the implementation of environmental protection efforts (Choy, 2016). On the issue of climate change, the Kyoto Protocol adopted in 1997 and enforced in 2005 provides the following three important mechanisms in addressing GHG emission standards to a level that would “prevent dangerous anthropogenic interference with the climate system”:

- (i) Emission Trading known as the “carbon market”
- (ii) Clean Development Mechanism (CDM) which involves investment in sustainable development projects
- (iii) Joint Implementation (JI), a mechanism enabling the industrialized countries to implement joint-projects with developed countries

It is thus clear that comprehensive and all-encompassing environmental control frameworks are in place to promote sustainable development and environmental protection worldwide.

3. Global environment: the status quo

Casual observation on the ground however indicates that the state of our environment has not only failed to improve but is also increasingly exposed to the threat of ecological impoverishment or anthropogenic destruction. The status of our environment may be indicated by some of the following examples:

(i) Over the past 100 years, about 90 percent of all large fishes including tuna, marlin, swordfish, shark, cod and halibut have disappeared from the world's oceans (Nature, 2003).

(ii) About 59 percent of large river systems are moderately or strongly fragmented by dams and reservoirs (Butchart et al., 2010).

(iii) The number of the world's ocean dead zones, that is, regions such as coastal areas where water oxygen levels have dropped too low to support most marine life, has doubled in frequency every 10 years since the 1960s, and by 2007 the number has reached around 500. This is largely attributed to eutrophication, an increase in nutrients in the water, particularly phosphorus and nitrogen (Secretariat of the Convention on Biological Diversity, 2010).

(iv) Humanity is now using up nature's services 50 percent faster than what the Earth can renew (WWF, 2006, Secretariat of the Convention on Biological Diversity, 2010).

(v) About 10-30 percent of the mammal, bird and amphibian species are threatened with extinction and 60 percent of our life-support systems are degraded (Millennium Ecosystem Assessment, 2005; Baillie et al., 2004, Hilton-Taylor et al., 2009).

(vi) Wild vertebrate species fell by 31 percent globally between 1970 and 2006, and out of 47,677 species including mammals, birds, amphibians, corals, and fresh water crabs assessed in 2009, 36 percent are threatened with extinction (Secretariat of the Convention on Biological Diversity, 2010).

(vii) Globally, some 30 percent of the wild lands have been exploited for agricultural development, leading to extensive habitat loss or fragmentation (Secretariat of the Convention on Biological Diversity, 2010).

(viii) Between 2000 and 2010, global primary forests (substantially undisturbed forests) have declined by more than 400,000 sq. km (Secretariat of the Convention on Biological Diversity, 2010). Between 2000 to 2012, the world lost about 2.3 million square kilometers (230 million hectares) of forest, with Russia and Brazil having the highest and second highest overall loss in absolute terms, and Malaysia, Cambodia, Côte d'Ivoire, Tanzania, Argentina, and Paraguay having a greater proportional loss (Hansen et al., 2013).

(ix) Arctic snow cover extent (SCE) anomalies for land areas north of 60°N in 2015 were below the long-term average between 1981 and 2010. The rate of SCE reductions since 1979 is -17.2 percent per decade and the total Arctic SCE fell below three million square kilometers partly due to strong surface positive surface temperature anomalies

(Derksen, 2015). In 2015, the Arctic minimum sea ice was 4.63 million square km which is 29 percent less than the 1981-2010 average.

(x) VIII and ix above are associated with increasing air and sea temperatures. Average air temperature anomalies in many parts of the Arctic in 2015 exceeded $+3^{\circ}\text{C}$ relative to 1981-2010 baseline (Overland et al., 2015) while sea temperatures off the west coast of Greenland and in the Kara sea in the same year were 4°C warmer than 1982-2010 mean in these regions (Timmermans and Proshutinsky, 2015). Also, average global sea level has increased by about 8.9 inches between 1880 and 2015 due to warming and expansion of ocean waters and melting of land ice (EPA, 2016).

(xi) In relation to ix to xi above, it is relevant to note that CO_2 emission has exceeded Kyoto Protocol 1990's base year of 22.7 billion metric tonnes, increased by 73 percent to 39.2 billion metric tonnes while CO_2 atmospheric concentration has exceeded the upper safety limit of 350 ppm (parts per million) since early 1988 to 404.39 ppm in July 2016 (CO_2 .Earth, 2016). It is worth noting that in 2014, China, the United States, EU-28 and India were the top four CO_2 emitters in the world, accounting for 61 percent of the global emission in the same year (Olivier et al., 2015).

(xii) The ocean water has become 30 percent more acidic due to the absorption of CO_2 released by the burning of fossil fuels. Since the industrial revolution in the 1880s, the ocean has absorbed 525 billion tonnes of CO_2 from the atmosphere, presently about 22 million tonnes a day. Ocean acidification is expected to produce dramatic and negative impact on ocean ecosystems (NRDC, 2009, Smithsonian Ocean Portal, 2015).

It is increasingly clear from the above that the global environmental protection initiatives have been less successful in integrating environmental sustainability into development discourse since Brundtland. Indeed the above provides incontrovertible evidence that the current environmental conditions are as worrying as ever. For the past few hundred years, and especially in recent decades, humans, in their interaction with the terrestrial biosphere, have significantly altered nearly all the earth's systems, especially the ecosystems, for our own benefit. As indicated above, the earth's natural systems including biodiversity are at risk of rapid deterioration and the legally binding CBD has failed to halt the continued loss of biodiversity.

Furthermore, two decades of UNFCCC failed talks have hampered progress in halting continued "dangerous anthropogenic interference" with the planetary climate system as reflected in the persistent increase in CO_2 emissions associated with increased frequency of life-threatening unusual and extreme weather conditions, and melting ice sheets (see, for example, Choy, 2015; 2016). The European heat waves in 2003, the deadliest in world history, for example, cost more than 70,000 human lives across the region, with Italy the hardest hit with a death toll of about 20,000 (Robine et al., 2008).

The preceding discussion highlights a growing disconnect between human systems and the natural world under the present neoliberal economic system — a system which is overly concerned with the instrumental use of the natural world for the pursuit of economic growth or material progress. Such natural resource use practices often entail the commodification and monetization of nature under one single monetary matrix, and this value monistic view of nature tends to promote social or political shifts in prioritizing resource exploitation over environmental sustainability.

In view of this, it seems that further massive biodiversity loss followed by severe reduction in ecosystem services that underpin long-term human existence is becoming increasingly likely (Secretariat of the Convention on Biological Diversity, 2010). Although the present dire environmental conditions do not necessarily trigger an imminent collapse of human civilization, the scale of ecological degradation and environmental crisis is alarming enough to require serious action to halt further encroachment into the terrestrial limits of our earth's systems. The rest of this paper proposes a new approach in conceptualizing sustainable development by placing greater emphasis on our stewardship responsibilities towards nature — an approach that begins with the examination of the longstanding ethical divide separating humans from non-humans in the contemporary neoliberal economic system dominated by the quest for economic growth and material progress.

4. The nexus of values, ethics and environmental sustainability: a conceptual assessment

In this section, we explore the concept of values that lies at the core of sustainable development decision-making. To begin with, in philosophy, the concept of values is central to the discussion of various forms of ethics (Dietz et al., 2005). Ethics is a system of moral principles or ideas motivating humans to care for their environment. Value denotes the degree of importance or worth of something. It is a relationship between humans and the environment (Bran et al., 2013; Horlings, 2015). Values influence and shape our attitudes and actions towards the environment (Dietz et al., 2005; PIRC, 2012). Furthermore, valuation refers to the estimation or understanding of the importance, meaning or worth of something (Costanza, 2000; de Groot et al., 2010). More specifically, it is an act of appreciation — a recognition of the objective existence of values, tangible or intangible (Bran et al., 2013). Hence, the concept of value enables us to understand human environmental behaviour.

It may further be emphasized that values cannot be reduced to a single superlative value (value monism) such as individual desire, preference, utility, happiness or wellbeing expressed in terms of monetary units as in the case of cost-benefit analysis. They occur as a result of our appreciation of a vast array of values attached to the natural system such as aesthetic value, spiritual value or psychological value, among others. Thus, the different values (value pluralism), and the psychological relationship between them, have important effects on social behaviours and attitudes towards the natural environment. More specifically, they connect the way in which we conceive of the natural system. Value pluralism also influences political institutions and norms, motivating significant policy changes when optimizing the economic use of nature (see, for example, PIRC, 2012).

It may further be added in the above light that value monism refers to the ethical philosophy that posits one ultimate super value such as utility or happiness (see, for example, Chang, 2015). It is a form of value reductionism which postulates that all values are commensurable and ultimately reducible to only one dimension of value or a single metric (O'Neill, 1997, Gómez-Baggethun and Ruiz-Pérez, 2011). The monist utilitarians, for example, often claim that there is only one ultimate value that matters and that is

maximization of happiness, and other supposed values are valuable only if they serve as a means to achieving happiness (Gesang, 2005). In other words, the monist theory of value holds that there is only one thing that is of value in itself, that is, intrinsically valuable while all other values are instrumental, that is, they serve as a means in achieving an end. Thus, the monists necessarily hold that there is only one ultimate intrinsic value and all other values are instrumental (Crowder, 2002).

To illustrate, if natural objects, such as rainforests, are desired because they can be used to achieve certain aims or goals, they are said to possess instrumental value. Instrumental value is normally associated with money, commodities, or material gain. Because of the instrumental value we place on the forests, they are subject to unrestrained exploitation, with the aim of making as much money as possible. Here, money is the only one thing that is of value. Furthermore, since the natural forests are only accorded with instrumental value, they are not deemed worthy of direct moral concern (Minteer, 2009). In other words, the forested environment matters only because it has some kind of utility or instrumental value to human beings.

Instrumental value is always a function of usefulness. This monistic position is anthropocentric or human-centred in nature. Anthropocentrism or anthropocentric environmental ethics grants moral standing exclusively to human beings, that is, humans are both the subject and object of ethics (Rolston, 2003). Anthropocentrism treats non-human forms of life and nature as a whole only as a means to meet human needs and many of the anthropocentric ethics censure human behaviour that threatens social wellbeing (Callicott, 2004). It is thus increasingly clear that value monism may not be able to capture the multiple value dimensions of human experience in the natural world system.

Value pluralism, on the other hand, claims that there are a number of distinct and conflicting values that cannot be reduced to a single ultimate value because they are incommensurable along a single rod of matrix or principle, that is, they lack a common measure (Chang, 2015). As distinct from value monism which claims only one ultimate intrinsic value, value pluralism holds that there is a plurality of intrinsically different values as well as intangible or non-use values (Crowder, 2002). Intrinsic value refers to value attached to those things in their own right, for their own sake or for what they mean, independent of their utility or instrumental value for humanity.

An intrinsically valuable thing is deemed to have a special kind of importance in moral decision-making because of its essential nature or properties which make it valuable. Thus, claims about a thing having intrinsic value are claims about the distinctive way in which we have reason to extend moral consideration to it (McShane 2007). This may take the form of “love, respect, admiration and a high regard for its value” (Leopold, 1949, p.223; see also, Mathews, 2014) — an important prerequisite for enhancing an Earth-respecting belief system and hence, environmental sustainability.

An Earth-respecting belief system subscribes to the ethical principle of ecocentrism. Ecocentrism extends moral consideration to a spectrum of non-human environmental entities including species, habitats or ecosystem (Callicott, 2004). Ecocentrism may be contrasted with biocentrism or a life-centred worldview of environmental philosophy which extends moral consideration exclusively to individual living things rather than

collective entities (Taylor, 1986). Thus, biocentrism may be considered an individualistic theory of environmental ethics (Callicott, 2004).

The ecocentric Earth-respecting belief system allows values to be understood more holistically. These values, which constitute the basis for our ethical reasoning towards nature, influence our environmental behaviour and treatment of nature consciously or unconsciously based on the admission of moral values for non-human entities. The essence of this ethical behavioural change is to do the “right thing”. A thing is right “when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise” (Leopold, 1949, p.262). As demonstrated in the following empirical study, this ecocentric environmental philosophy has a distinct and integral role to play in environmental sustainability.

5. Indigenous culture, values and environmental sustainability: an empirical study

This section seeks to empirically support the argument expounded using lessons drawn from extensive field research conducted in Malaysia between 2007 and 2011. The 5-year field research was conducted in 50 indigenous villages mostly scattered across the forest interiors in the state of Sarawak in Malaysia (Table 1). The field research sought to assess the multiple ways indigenous people conceptualize the values of the natural system and the implications for environmental behaviour and environmental sustainability.

Table 1: Targeted areas of study

Year	Month	Name of longhouse/tribe	Location
2007	May	Mudung Ambun (Kenyah)	Bintulu
	May	Terbila Tubau (Kenyah)	Bintulu
2008	February	Ado Bilong (Penan)	Bintulu
	May	Long Bala (Kenyah)	Bintulu
	May	Long Apok (Penan)	Bintulu
	May	Rumah Anthony Lerang (Kenyah)	Bintulu
	August	Rumah Bagong (Iban)	Bintulu
	August	Rumah Jalong (Kenyah)	Bintulu
	August	Long Biak (Kenyah)	Bintulu
	August	Kampong Gumbang (Bidayuh)	Kuching
	August	Tanah Mawang (Iban)	Kuching
	August	Nanga Entawai (Iban)	Sibu (Song)
	August	Kulleh Village (Iban)	Sibu (Song)
	October	Rumah Amit (Iban)	Bintulu
	October	Rumah Mulie (Iban)	Bintulu
	October	Rumah Kiri (Iban)	Bintulu
	October	Uma Sambop (Kenyah)	Bintulu
November	Rumah Akeh	Miri	
2009	January	Long Lawen (Kenyah)	Bintulu
	January	Long Wat (Penan)	Bintulu
	January	Long Pelutan (Penan)	Bintulu
	January	Long Peran (Penan)	Bintulu
	January	Long Jek (Penan)	Bintulu
	July	Long Koyan (Kenyah)	Bintulu
	October	Rumah Sekapan Pitt (Kenyah)	Bintulu
	October	Long Dungun (Kenyah)	Bintulu
	October	Sekapang Panjang (Kenyah)	Bintulu
	October	Rumah Aging Long (Penan)	Bintulu
	November	Kampong Sg. Entulang (Iban)	Miri
	November	Kampong Sg. Buri (Iban)	Miri
	November	Long Laput (Kayan)	Miri
	November	Long Tutoh (Kenyah)	Miri
	November	Long Ikang (Kenyah)	Miri
	November	Long Banyok (Kenyah)	Miri
December	Long Miri (Kenyah)	Miri	
December	Long Na'ah (Kayan)	Miri	
December	Long Pillah (Kayan)	Miri	
December	Long Kesih (Kayan)	Miri	
2010	February	Arur Dalam (Kelapit)	Miri (Bario Highland)
	February	Bario Asal (Kelapit)	Miri (Bario Highland)
	February	Ulung Palang (Kelapit)	Miri (Bario Highland)
	August	Rumah Busang (Iban)	Miri
	November	Rumah Rangong, Sungai Sah (Iban)	Miri (Niah district)
	November	Rumah Umpur (Iban)	Miri (Niah district)
	November	Rumah Ampan (Iban)	Miri (Niah district)
	November	Rumah Usek (Iban)	Miri (Niah district)
November	Rumah Tinggang (Iban)	Miri(Niah district)	
2011	February	Batu Bungan (Penan)	Mulu (near Miri)
	February	Long Iman (Penan)	Mulu (near Miri)
	February	Long Terawan (Berawan)	Mulu (near Miri)

Interviews were conducted with the local people in the Malay language through random house visits and field encounters. On average, 10 to 15 people from each village were interviewed. The main aim of the interviews was to explore the local people's conception of and relationship with nature. These include the local people's moral environmental sentiments and indigenous cultures and values, among other areas of interest.

On the whole, the field research reveals clearly the local communities subscribing to a multiple ecologically and morally oriented environmental value system. To the local communities, the natural system (land and forests) serves not only as a source of socio-

economic sustenance such as farming, hunting, and provision of forest produce (instrumental value) but also as a core part of their cultural identity and spirituality.

For the past few hundred years, the local communities have cultivated an intimate relationship with the natural environment through daily interaction with their land and forests. They consider themselves as part of, and belonging to, nature and have strived to live in harmony with the aesthetically pleasing natural system from which they derive various intangible benefits such as psychological satisfaction, aesthetic appreciation of plants, animals and places, and environmental value (belonging to or coexisting with nature). These intangible values are directly linked with wellbeing, happiness and quality of life of the local communities.

The ancestrally evolved local environment is also viewed with a sense of belonging and as repositories, that is, it is attested with kinship value and a sense of place value. Also, in view of their traditional and strong cultural attachment to the land and forests, the local people asserted that they owe a moral duty to their ancestors to protect their natural environment for the benefit of future generations. The ethical concern for the welfare of future generations based on moral obligation is a duty-based ethics called deontology (moral value).

The local communities also consider their ancestral land and forests as symbolically linking them with the ancestral past and the yet to be born future generation. This human-nature relationship embodies an inherent set of moral, traditional, cultural, spiritual stewardship and symbolic values. Furthermore, most of the local communities refuse to recognize monetary trade-off for their traditional land and forests (Choy, 2014; 2015). It may be said the local communities have a lexicographic preference for their land and forests. The spectrum of values as endorsed by the local communities is summarized in Table 2.

Table 2: Indigenous pluralistic value system

Socio-economic sustenance	instrumental value	Remark
Intrinsic and intangible values cultivated and nurtured based on traditional and cultural beliefs and through daily and intimate interactions with the natural environment	psychological value	underpin indigenous land ethics and environmental sustainability
	aesthetic value	
	cultural value	
	moral value (future generation)	
	environmental value (belong or coexist with nature)	
	stewardship value	
	sense of place value	
	kinship value	
	symbolic value	

The indigenous pluralistic value system has generally developed an ecocentric view of nature in the local communities and this has far-reaching implications for environmental sustainability. These values, as the foundation of the indigenous ecocentric

environmental belief system, play an essential role in guiding the local communities' sustainable resource use practices by maintaining a balance between instrumental exploitation of natural resources and intrinsic conservation of nature. This is articulated in the traditional land use system of the local communities which is categorized into three distinctive patterns:

- (i) Hunting and gathering in the forested region known as *pemakai menoa* (instrumental use)
- (ii) Farming on agricultural land near the indigenous settlement known as *temuda* (instrumental use). Swidden agriculture or shifting cultivation is a traditional form of farming among the local communities. Depending on the size of the families, a few acres to 20 acres of the secondary forests may be used for shifting cultivation
- (iii) Preservation of old growth forests known as *pulau*. The *pulau* are communal forests which are considered as totally protected area (intrinsic conservation). The area preserved may cover thousands of hectares. As a case in point, in one of the targeted areas of study, Long Lawen, for example, the total area preserved covers 11,900 hectares while 9,800 hectares of secondary forest are set aside for hunting, gathering and Swidden agriculture (based on field research conducted in 2009).

The indigenous instrumental use of nature is thus non-destructive in the sense that it is "oriented to the life-enhancing, sensuous, aesthetic qualities inherent in nature" (Marcuse, 1972, p.67). This is reflected in the demarcation of proportionally large portions of the forests into community forests which have value of their own and are morally significant. The emphasis here is to conserve its integrity and beauty and its myriad intangible values. Note that private ownership of community forests is not recognized because these environmental resources are held in common by all the inhabitants at large. They are considered as tribal rights rather than individual rights, belonging to the past (the dead), the present (the living) and the future generations (Colchester, 1993; SAM 1996).

It is thus increasingly clear that the indigenous pluralistic value system has played an important role in harnessing an ecocentric Earth-respecting belief system driven by an ethical concern for nature and a moral obligation to act with care, forbearance and restraint when interacting with the natural environment or optimizing the instrumental use of nature. Numerous field trips to the targeted areas of study revealed that for the past few centuries, the ecocentric Earth-respecting belief system of the local communities has helped them preserve the ecological integrity of their natural systems. The discussion that follows proposes that this holistic perspective to environmental sustainability is the kind of concept needed to overcome the anthropocentric view of sustainable development.

6. Sustainable development revisited

The Brundtland vision of development sought to promote a new era of growth that is "forceful and at the same time socially and environmentally sustainable" (WCED, 1987, p. xii). The aim of this new era of growth is to ensure the fulfilment of the needs of the present without compromising the ability of future generations to meet their own

needs. It places great emphasis on the need for equitable distribution and control of resource base between generations (McCloskey, 1999). The locus of sustainability is to promote economic growth without tapping into the patrimony of nature to the extent of compromising the interests of future generation. This will serve its purpose of championing its principle of intergenerational equity—one of the most important aims of sustainable development.

Thus, the motivation for environmental sustainability here is to protect the economic interests of future generations. It is human interests that is at the centre of concern rather than the needs of species or ecosystems. Thus, placing people at the heart of the economy is recognizing that only humans have intrinsic value and non-human entities have value insofar as they serve human interests. Viewed from this perspective, the Brundtland definition of sustainable development is anthropocentric in nature.

In recognizing the limitations of the biosphere or the carrying capacity of the Earth's ecosystems to absorb "effects of human activities", the Brundtland Commission calls for the need to conserve and protect our global commons for the long-term socio-economic prosperity of the human race (WCED 1987: 8). Again, the concern here is to ensure that the wellbeing of present and future generations in terms of various environmental services provided by nature is protected. The ethical concern for environmental protection rests on the idea that the natural environment has instrumental value to human beings.

In other words, the motivation for environmental protection is not because the environment is morally considerable but because uncontrolled environmental degradation will threaten the instrumental value of the natural systems, that is, the productive potential or the life-supporting services of ecosystems received by human beings. This human-centred environmental policy is largely motivated by the ethical impulse of anthropocentrism, that is, it is evaluated fundamentally on the basis of how they affect human wellbeing without due regard for the moral relationship between humanity and the natural environment.

Also, the Brundtland concept of sustainable development seeks to reconcile economic growth and environmental sustainability while promoting social justice, but it stops short of establishing an environmental or ethical norm to arbitrate between conflicting objectives and to guide responsible environmental actions in achieving environmental sustainability while promoting economic growth. It may well be that, as reflected in the above case study, environmental sustainability hinges on the ethical underpinnings and moral obligation to act with care and restraint in dealing with the environment. That said, in its attempt to reconcile environmental sustainability with economic growth, the Brundtland Commission has failed to revitalize the human culture of nature and provide the ethical justifications for environmental protection both of which are important in shaping more responsible environmental policies. This allows environmental and development policies to be made discretionary to the disadvantage of the environment. Indeed, in a real world system, especially viewed from the Asian perspective, sustainable development is often idiosyncratically interpreted as sustaining long-term economic growth with the economic concern for material progress overshadowing the moral concern for environmental sustainability.

It may thus be remarked in light of the above that the root of sustainable development problems lies in how we perceive the environment and our place in the non-human natural world. For too long, the Brundtland Commission has overlooked the moral aspect of environmental sustainability which plays an important role in promoting strong public ethical commitment to conserving and preserving nonhuman nature as demonstrated by the above case study. It also does not emphasise the number of distinct intrinsically valuable properties attributed to the natural environment which are equally important in enhancing social wellbeing. Thus the environment is narrowly and instrumentally viewed as a means to satisfy human needs and wants. Such an anthropocentric view of nature tends to discourage public intuition about concern for the environment, and hence is unlikely to promote morally justifiable attitudes and sound environmental policies.

Unless and until environmental philosophy comes down to earth successfully to resonate with policy makers or members of society on how we should view the world, the pillar of environmental sustainability as embraced by Brundtland is unlikely to endure or to have any lasting effect. It is time for sustainable development to consider embracing non-anthropocentrism and value pluralism as applied and practical philosophy in the analysis of sustainability policy debates and in addressing environmental sustainability issues.

Conclusion

It is obvious that sustainable development involves economic, social and environmental aspects. What is less obvious is that it also poses an ethical problem. The basic thrust of the argument is that the root of many of the present environmental problems lies in how we perceive nature and our place in the natural world. As conceptually and empirically demonstrated above, value pluralism and environmental ethics provide the philosophical basis for human engagement with the natural world. The challenge here is for us to overcome the anthropocentric view of nature—the view which sees the natural environment as an instrument or a means to serve human interests. Only then are we able to establish values, ethical concern for, and moral duties to the natural world. The essence of these ethical insights serves as a moving force of sustainable environmental behaviour—a prerequisite for environmental sustainability.

Arguably, sustainable development as defined under the Brundtland Report lacks the above ethical tools to guide our actions in dealing with the natural world. By and large, it is anthropocentric in nature, mainly promoting human interests based on sustainable development, that is, development that lasts indefinitely. Viewed from the Brundtland perspective, protecting the environment is important because it is instrumental to sustaining its long-term goal of development that meets the needs of the present and future generations. Thus, there is practically an absence of ethics within its economic thought. The failure to consider the ethical dimension of sustainable development is what is essentially at stake

In addressing this sustainability dilemma, it is necessary to re-conceptualize sustainable development based on values and ethical insights which lie at the core of sustainability decision-making. In other words, if sustainable development is to be a

useful concept, it must embrace the ethical dimension of sustainability rather than fundamentally targeting its classical anthropocentric aim of meeting “the needs of the present without compromising the ability of future generations to meet their own needs”.

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