



## Sustainable Development, Greening and Eco-efficiency

### -A Political Ecology

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**Abstract.** Paul Collier argues that, “Proper stewardship of natural assets and liabilities is a matter of planetary urgency: natural resources have the potential either to transform the poorest countries or to tear them apart, while the carbon emissions and agricultural follies of the developed world could further impoverish them”<sup>1</sup>. This line of debate has been more fashionable in understanding the growing deleterious effects of environmental use currently riddled with inequality. The essay builds on seminal studies such as UNEP 2012 post Rio environmental reports, TRUCOST,(2008,2013)an independent environmental survey which provided an analysis of global cost of damage on the environment by the business sector. The aim is to create possible linkages between environmental consumption and sustainability. This strand forms an offshoot of the “unsustainability” thesis where core development issues such as green economy, eco- efficiency, ecological footprints, dematerialism etc, are marginalised by the high income countries. In an increasingly globalizing world, eco-efficiency, emphasizes creating more goods and services with ever less use of resources, waste and pollution. This paper sets to interrogate the post Rio+20 Summit and the extent of global operationalization of eco-efficiency among corporate organizations. It explores certain theoretical evidence on production and consumption dynamics of multinationals in the high income countries using the political ecology tools of analysis. Findings suggest evidence of prevailing global unsustainable environmental use which taints green economy, eco efficiency and sustainable development. It recommends that lack of policy implementation in this direction poses greater challenges to sustainable development.

**Keywords;** Sustainable Development, Policy Implementation, Green economy, Eco-efficiency.

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## Introduction

At the post Rio +20 summit, minimal optimism on global environmental sustainability swirls as sustainability and greening problems are at the centre of 21st century development debate. (Meadows, et al., 1972; Bruntland Report, 1987; Rio, 1992; Worldwide Fund for Nature, 1999; Davidson and Hatt, et al., 2005; Hobson, 2003; Rio Report, 2012). According to World Watch Institute (WWI), “The United Nations Rio +20 conference in 2012 culminated in a vague, unambitious document that does little to define or outline any measurable goals or strategies to promote environmental conservation and justice”. (World Watch Institute, 2013)

Central to this are debates on increasing need for corporate organizations in the affluent societies to prioritize eco-efficiency in resource use (Crosby, 1986; Robins, et al; 2000; Dressen, 2004;). Similarly, the ethics of sustainability (Gasper, 2004; Kibert, et al; 2012) which is now more fashionable in exploring dynamics of eco efficiency among corporate organizations seem understudied at the time of evaluating corporate greening strategies of firms.

The UNDP Human Development Report (2011) argued that beyond the Millennium Development Goals, the world needs a post-2015 development.(p.iv). This resulted the adoption of Sustainable Development Goals (SDGs) .Sustainable Development Goals (SDGs) as argued in this paper requires global equity to thrive. These growing challenges informed the need to explore the dynamics of sustainability thesis both in the transition economies where it has relatively low cogitation and the industrialized countries where unsustainable lifestyles increasingly erode sustainable development.

Research on sustainable development has thus become increasingly engaged with questions of ecological justice and in particular, with how anthropogenic choices, institutional structures, and forms of environmental interactions influence, alter or reinvigorate the environment and how, in turn, these structures reflect deeper forces, such as the patterns of post -colonial social formations, conflicts,

physical geography, natural resource endowments and uses, the disease ecology of societies, ethnic diversity, environmental security, climate change, human development, gender, global North/South ecological interactions, racial discrimination as well as a host of other cultural factors.

While the ultimate concern is how these choices shape patterns of economic development—which may be taken to mean the attainment of a certain degree of wellbeing by a society, ranging from human freedoms -including the freedom from disease, hunger, economic want, insecurity of person and property, political or religious tyranny, and the positive freedoms of thought, cultural expression, and the enjoyment of leisure (Sen, 1999)— Much of these seem not to have been attained in the context of sustainability.

Thus, sustainable development remains contested in contemporary development discourse despite clamour by the international community in this direction. Many of the deep issues and empirical evidence associated with sustainability are firmly rooted in the broader environmental challenge of promoting and sustaining high and inclusive economic growth. It is this growth that allows individuals and societies to enjoy and afford the freedoms that Sen describes. Sustainable development is thus inextricably tied to ecological footprints and components of economic growth including eco -efficiency. Which emphasizes “creating more value with less impact”. It is within this remit that this paper seeks to examine environmental sustainability and green economy as issues of sustainable development concern with the notion that the nature and patterns of environmental transactions within the economy which is the superstructure are integral components of sustainable development.

Contrary to the widely held view of the ecological modernization theorists that environment is hardly depleted, we bring to bear the uncertainties of global warming. We argue that global warming and ozone layer depletion is real with green house effects and increasing environmental hazards such as the recent June 2013 tornado in the United States, the tsunamis, sea level rise, the Haiti

earthquake 2012, the October and November 2012 flood disaster in the Niger Delta region of Nigeria etc point to the fact that policy discourses on vulnerability of climate change and environmental sustainability seem to be at superficial levels.

This paper presents a critical analysis of sustainable development and argues that failure to address global unsustainable environmental consumption and institutionalize environmental equity will catalyze depletion of natural resources, poverty and negative effects on humanity. Environmental resource use should be a goal-directed activity that can create a disinclination to unsustainable use. This is not to say, however, that every activity of man in environmental consumption is unsustainable rather situational industrial and personal conditions that often affect sustainable use of the environment abound which invariably results unsustainable environmental consumption. Much of this is seen among the high income countries where national and international environmental conventions are undermined by deleterious activities such as industrial pollution etc. We posit that there is a likelihood of overt and persistent inimical effects on human development with less care on sustainable environmental use.

The paper thus, proposes a well-worn analysis that should be revised to accommodate environmental use. This reformulation essentially addresses the question of why green economy should be prioritised in environmental development discourse as its marginalization has given rise to an instigation to persistent unsustainable environmental use despite the sustainability discourse.

It sets forth to find answers to questions such as; Why has the sustainability debate been riddled with contradictions, complexities and marginalization? Why has the lifestyles and patterns of consumption of the high income countries been unable to demonstrate equality and ecological justice,? Why has the culture of environmental justice been elusive in environmental policy discourse.? What explains the recent resurgence of environmental disasters outlined above? Why has some resource abundant economies, such as Botswana and Norway, been able to manage their endowments successfully while others such as Nigeria and South

Sudan have so manifestly failed to reap same benefits? Why has environmental issues not been effectively integrated and implemented in the mainstream development discourse despite global environmental summits?

These are huge questions, some of these concerns are the basic debates we seek to substantially engage and it is no surprise that understanding the patterns and processes of sustainable development across the world, remains one of the enduring preoccupations of sustainability discourse.

The paper offers a new look at the possible connection between Sustainable development, green economy and eco-efficiency. The aim is to understand how industrial activities and production dynamics are framed in line with eco-efficiency.

Rather than reviewing all of the studies bearing on this relationship, it focuses on the major theoretical issues that have been raised regarding eco -efficiency hypothesis and cites only those investigations that seem most relevant to these particular questions. Thus, after summarizing prevailing debates and original conception, the paper takes up some of the major criticisms that have been levelled against existing formulations and attempts to demonstrate, by making use of an admittedly highly selective theoretical debates, that green economy, properly defined and practiced, can contribute to eco-efficiency and sustainable development.

The debate presented in this paper makes some salient contributions to the field of sustainable development policy. First, it demonstrates how the activities of corporate organizations undermine sustainable development thus corporate greening should share top priority as over-arching directives of international development strategy. It argues for plausible mechanisms at alternative economic models to measure the cost of environmental degradation. It introduces a novel understanding of equitable and just environmental consumption to interrogate the tenacity of existing international development policy. In particular, it provides evidence of deleterious effects of environmental consumption by corporate organizations and the high income societies.

## Materials and Methods

One of the most influential approaches in studying Sustainable Development, Greening and Eco-efficiency dynamics is the political ecology method. This is more so as it provides systemic account of the forces of anthropogenic interactions and inequality in environmental resource use (Blaikie and Brookfield, 1987; Peet and Watts, 1996; Bryart and Bailey, 1997; Stott and Sullivan, 2000). A political ecology links the underlying assumptions of environmental consumption to sustainable development in the context of equality and resourcefulness. Peet and Watts (1996) argue that environment and development are central to political ecology debate. They posit that political ecology is concerned with research on the sociology of science and knowledge, on the history of institutions and policy on environment and development and most importantly on globalization of environmental discourse in relation to “new languages” and institutional relations of global governance and management”(p.11).

We would adopt the neo-Marxist political ecology approach aimed to explore the dynamics of global inequality in environmental consumption. From the perspective of political ecology, labour is not the primary, self-renewing force described by Marxists, in the sense of creating or recycling its own energy. Energy cannot be created by labour or physical capital, but instead must be recovered from the environment. Just as labour is needed to produce labour, energy is needed to recover new supplies of energy from the environment. (Kovel, 2000; Hawken, etal; 1999). And under capitalism (or any mode of exploitation), as labour can produce more goods and services than needed for its own reproduction (surplus labour), energy can be used to recover an even greater amount from the environment (surplus energy). For Marxists, the creation of wealth (measured as exchange-value) under capitalism is achieved via the exploitation of labour, the extraction of surplus labour from human nature. For political ecologists, the creation of wealth (measured as use values) under capitalism has been achieved via the exploitation of nature, the extraction of surplus energy from mother nature. For Marxists, the result is an immiseration of the working class.

Thus, in exploring the dynamics of sustainable development in the purview of green economy and global eco-efficiency appraisal, we examine theoretical debates and literature on patterns of exploitation of the natural environment and the degree of renewal that accompanies such interactions which forms the spring board of political ecology treatise. This is more so in an increasingly dichotomised global system, where the high income societies of the global North appropriate natural resources in a variety of potentially unsustainable and inequitable manner through their multinational corporations with less recourse to the attendant inimical implications on humanity and specifically the poor societies. We set forth to examine how this unequal interaction distorts and poses challenges to environmental sustainability.

### **Corporate Greening and Eco-efficiency Dynamics**

There is no consensus among scholars on the meaning and use of the concept of greening. Green economy became frontal in development discourse at the aftermath of the Rio Summit of 1992, it focuses on environmental renewal through the amelioration of unsustainable use. The reports of the 1987 Brundtland Commission forms the original proposition for green economy treatise following the emergence of the sustainability debate.

At the Rio +20 summit, The *future we want*, Green economy in the context of sustainable development was among the three pillars. The UN Environment Programme (UNEP) defines the green economy as one *“that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”*. Burkart(2012) defines a green economy as based on six main sectors:-Renewable energy, Green buildings, Sustainable transport, Water management, Waste management, Land management.

The Global Green Economy Index(GGEI), measures 4 primary dimensions defining a national green economy as follows: Leadership and the extent to which national leaders are champions for green issues on the local and international stage, Domestic policies and the success of policy frameworks to successfully promote renewable energy and green growth in home market ,Cleantech Investment and the

perceived opportunities and cleantech investment climate in each country ,Green tourism and the level of commitment to promoting sustainable tourism through government( GGEI,2000).

The Rio+ 20 Report, considers green economy in the context of sustainable development and poverty eradication as one of the important tools available for achieving sustainable development and that it could provide options for policymaking but should not be a rigid set of rules.(Rio Report, 2012). Green economy includes green energy generation based on renewable energy to substitute for fossil fuels and energy conservation for efficient energy use (Ibid).

In 1992, Agenda 21 the programme of action adopted in the Rio Summit gave more impetus to green economy. Growing evidence on unsustainable environmental use in an era of global clamour for green economy is well documented and widely recognized (Hobson, 2003, McDonough and Braungart, 2002).

The 1990s and early 2000s have been a period of rapid consumption growth for the average household, as consumption outpaced income growth, and savings rates declined. (Schor, 1998). Between 1993 and 2004, real personal consumption expenditures per capita rose from \$19,593 to \$25,973 (2000 dollars), or 33% (CEA, 2005:247).

“In recent years, the concept of sustainable development has become popular. According to the Brundtland Report, (1987), sustainable development is that "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs."

Dynamics of global interaction with the environment at post 2012 Rio +20 summit draws attention to closer extrapolation of sustainability and greening discourse.

Theoretical debates on the sustainability discourse have been profound from a multi-dimensional perspective. The corporate sustainability movement ...attempts to apply sustainability to guide the behaviour of business with respect to both society and the environment as well as its responsibility to stockholders. In this new model corporations value their success not solely based on its financial bottom-line, but also on their environmental and social performance. This shift in corporate



attitudes from purely profit-making operations to sustainable organizations is nothing short of startling (Kibert, etal, 2012).

Daily and Ehrlich (1996) argues that the central goal of sustainable development is to ensure that expanding consumption levels within a society remain within the carrying capacity of the ecosystem upon which the population depends for sustenance.

Goodland (1995) observes that environmentally sustainable development implies sustainable levels of both production (sources), and consumption (sinks), rather than sustained economic growth. The priority for development should be improvement in human well-being—the priority for development should be improvement in human well-being –the reduction of poverty, illiteracy, hunger, disease, and inequity. While these development goals are fundamentally important, they are quite different from the goals of environmental sustainability, the unimpaired maintenance of human life support systems—environmental sink and source capacity.

We argue that the Sustainable development and green economy relationship is basically a special case of a more general connection between inequitable environmental use and unsustainable inclinations. For instance sustainability issues such as eco-imperialism among multinationals as Dressen (2003) posits, produce an instigation to environmental exploitation to the degree that they generate negative effects to the environment.

Conceptually, Hawken, etal; (1999) used concepts such as ecological footprint and triple bottom line to analyse sustainability nexus. They argue that, what is "sustainable" may vary from country to country, depending upon moral values toward environmental preservation and conservation of natural capital. Different cultures have different attitudes of "respect" or "disrespect" toward the environment (e.g., plants, forests, woods). They further argue that, "One person's "weed" may be another person's "flower." However, sustainability is not just about ethics, philanthropy, or socially responsible business. Sustainability thinking involves, at base, a desire to achieve human and ecosystem longevity along with a greater sense

of well-being and connectedness. The notion of "well-being" is associated with the sociological or criminal justice concept of Quality of Life, which is the idea that not only can people be relatively free from pain and disease, but they can be free from worry, stress, and other negative emotional states".

Both South African ecologist Patrick Bond, Canadian water activist Maude Barlow, and influential US economist Lester Thurow at varying degrees have for instance argued on the negative effects of unsustainable environmental consumption. While Bond explores the unsustainable development proclivities in South Africa( Bond, 2002),Barlow argues on the ongoing commodification of fresh water which has further tainted sustainable water use and fosters unequal access to natural resource use .She further argued that the profiteering of natural resource commit us to believe that they are mere commodities ( Barlow ,2004) .

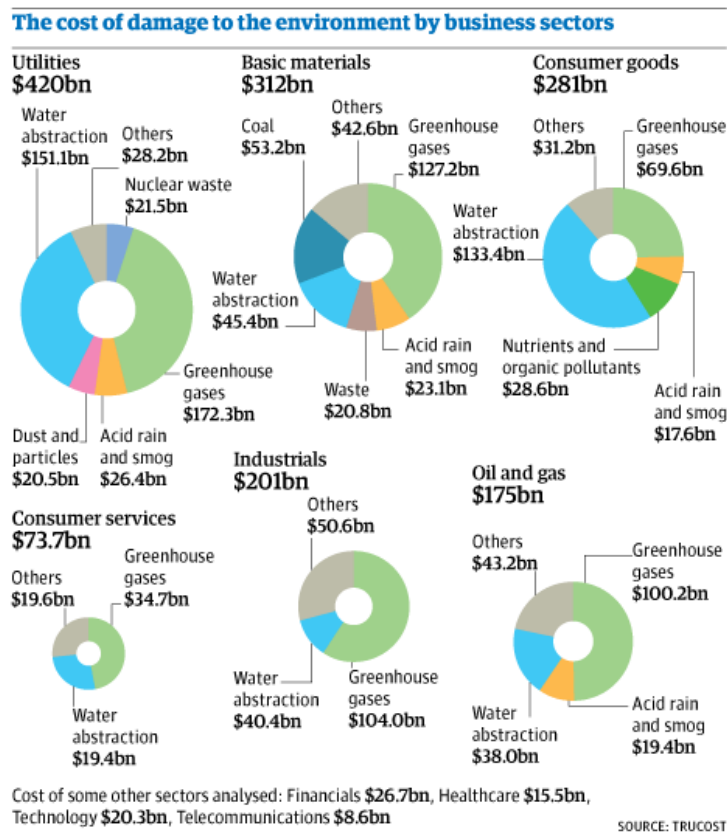
According to de Villiers (2000), "A French corporation, Lynnaise des Eaux is the world's largest water company, servicing sixty –eight million people in some thirty countries including Canada where it provides water to half dozen municipalities(de Villiers, 2000, cited in Davidson & Hatt, etal., 2005:63).Its capitalist and environmental implications remains enamours.

Thurow, (1992) argues on the persistent rise in global unsustainable environmental consumption .He observes that; "if the world's population had the productivity of the Swiss, the consumption habits of the Chinese, the egalitarian instincts of the Swedes, and the social discipline of the Japanese, then the planet could support many times its current population without excessive pollution or deprivation for any-one. On the other hand ,if the world's population had the productivity of Chad, the consumption habits of the United States, the egalitarian instincts of India, and the social discipline of Yugoslavia, the planet could not support anywhere near its current numbers. Unfortunately, most humans seem to fall in the America-India-Chad-Yugoslavia category"(p.226) .

The Intergovernmental Panel on Climate Change (IPCC) reports that by 2020, up to 250 million people across Africa are expected to face increasingly severe water shortages (IPCC, 2007).

A 2010 report conducted for the UN estimated that world's top firms cause \$2.2tn of environmental damage. The study, conducted by London-based consultancy Trucost .. found that the estimated combined damage was worth US\$2.2 trillion (£1.4tn) in 2008 - a figure bigger than the national economies of all but seven countries in the world that year (Jowit,2010).

**Fig 1.**



**Sources:** TRUCOST, 2008, Quoted in The Gurdian,2010 Available at <http://www.guardian.co.uk/theguardian>

Similarly many of the factors affecting the probability of equitable environmental use is found in the asymmetrical structure of the international capitalist system and the prevailing global trade regimes, where value augmentation, profit maximization and market fundamentalism are the order of the day which compel us to believe that environment is largely a commodity to the highest bidder. The 2013

data provided by TRUCOST equally demonstrated increasing environmental degradation.

Schor (2005) argues that: “Regrettably, the current rules and structure of the global economy are moving the world in an opposite direction. Neo-liberal policies continue to undermine the bargaining power of labour. The elimination of regulations governing capital flight have led, not only to catastrophes like the Asian financial crisis, but also to more leverage for capital, which uses its mobility to repress wages”.(p.5).She further points out that: “this capital flight, both actual and threatened, has been an important component of the ongoing regime of low and even falling wages in developing countries. The Bretton Woods institutions have to date served the interests of multinational capital, at the expense of workers and in many cases, domestic capital”(p.5).

This broader proposition also props up questions to yet another frequently mentioned challenge to sustainable development namely; that “sustainability has not been designed to practically incorporate gender issues”. The Rio + 20 report “the future we want” raised similar concern within key pillars of sustainable development. The likelihood that any of the pillars could be upheld by the high income countries have been very slim and hotly contested. For instance the US private consumption currently entails a globally disproportionate use of resources, as measured by ecological footprint, measures of material weight, and numerous other indices and estimates (Wackernagel, 1999; Wernick, 1997; Schor, 2005).

Hobson (2003) made similar observation in a study; “Consumption, Environmental Sustainability and Human Geography in Australia” and deduced that the high income countries have been on collusion cause with environmental unsustainability. Perhaps more critical according to her is “growing inequality in consumption and sustainable environmental use among high income countries” .

On the other hand, Daniel Milner, illuminates the conservative consumption of Norway as perhaps the only exception among high income countries. According to Milner;

when I teach about consumption, I always start by asking students to think of their prime example of a consumer society as not the US but Norway-for the simple reason that ,when it comes to politics over the last few decades, I just can't think of a preferable example that actually exists" He further posits that, " Norway is just as wealthy and capitalist as the UK or the US, yet it has become and remains one of the wealthiest countries today, in combination with perhaps the strongest commitment to social egalitarianism and social welfare anywhere in the world (Milner, 2012).

More recently is the impact of globalization in vitiating sustainable development as new discoveries and unsustainable environmental endeavours are on the increase. Douglas Holt identifies, "exotic activities", in the context of globalization, according to him, "The increasing globalization of the world economy has also facilitated the consumption of virgin and exotic resources on a broader scale than previously. Examples include travel to remote areas, the trade in exotic pets, and the use of rare, tropical hardwoods" (Holt, 1998 ;Schor, 2005).

According to the UNCED document; "For once consumption is deeply rooted in lifestyles and values of the industrial societies"(UNCED, 1992:69).This cultural notion has largely shaped the orientation of the industrialized societies since post industrial revolution with novel notion of development as ability to tame nature ,this has misconstrued core development issues such as environmental sustainability and renewal.

In their 2012 influential book, preparatory to the Rio summit, *Only one Earth: The long Road Via Rio to Sustainable Development*, experts on the UN system Felix Dodds.Michael Strauss and Maurice Strong(2012)identify key development challenges such as climate change.

A number of similar studies seek to test or apply the original conception of environmental sustainability to development discourse some of which identify the conditions that can affect the likelihood of overt unsustainable environmental use and of course, the global effects.

Studying the UK strategy for sustainable consumption, Seyfang, (2004) identifies a number of failings in current policy, arguing that the UK strategy is strongly biased towards individualistic, market-based and neo-liberal policies, so it can only respond to a small part of the problem of unsustainable consumption. Worsel (1992) for instance, foreshadows such concern when he examined the rate of high unsustainable consumption in Canada.

The impact of population growth on environment has also been explored. (Ehrlich and Ehrlich, 1991; Newton, 1992).Daily and Ehrlich ,(1996) demonstrate the existence of socio- economic inequality in sustainability and earth's carrying capacity. They observe that; "it may be difficult even for drastic changes in consumption and technology to offset the increase in environmental deterioration associated with projected population growth"(p.1)

**Table 1. Percentage of World Urban Population, ACTUAL AND PROJECTED, 1800-2000**

	Urban(Over 20,000)	Larger Cities(Over 100,00)
	%	%
1800	2	2
1850	4	2
1900	9	6
1950	21	13
1975	42	26
2000	61	42

**Source:** Davis Kingsley. "The origin and growth of urbanization in the world" American journal of sociology, 60:430, Davis Kinsley world urbanization, 1950-70, vol II(1972), pp.126-127.

In Gillis et al 1980:527. Note: Percentages are rounded

The principal postulations of the pillars of sustainable development had to do with the effects of deleterious activities of human beings on the environment, but other ideas dealt with the target of the resulting implications, and still others with the

possibility of a cathartic lessening of the unsustainable use of the environment. Each of these is conceived as a reinforcing pillar of the other, namely; *economic* development, social development, political development and *environmental* development.

Many writers have discussed these propositions which are highly influential and interrelated to development discourse and challenges of the 21<sup>st</sup> century. (Goodln, 1995; Shiva, 1995; Hawken, etal; 1999) For instance, in the last two decades, questions of sustainability have moved from the margins back to the centre of all branches of development, including the study of human development, (UNDP, 1990; Sen, 1999) with human development index (HDI) as provided in the annual seminal UNDP reports since 1990.

In the evolving intellectual diagnosis on “Human Development Index” (HDI) by the UNDP specifically in the 1990s was the development of the Human Development Reports (HDR) and how this has translated into policy on Human Development. The growing problem in this regard has been empirical validation and generalization on issues such as human rights abuses, insecurity, racial discrimination, growing inequality (gender), poverty etc which have been elusive.

Though human security has been explored (UNDP, 1994; Klare, 1996), greening and ecological inequality in the context of environmental resource exploitation are policy issues.

For much of this period, and drawing inspiration from the pioneering works on human development, Sen conceives development as freedom and argues on “removal of obstacles and enlargement of peoples choices” (Sen, 1999).

This revolution has had a profound impact on how development approach impact economic wellbeing by bringing to the fore environmental, gender, human, economic rights, security and political choices and the role of institutional reforms in shaping societal decisions, the study of sustainability has forced development experts to engage much more closely with disciplines such as ecological footprints, green economy, eco- efficiency, eco labelling etc. While at the same time it has brought

some of the theoretical and empirical rigour of development to these fields, however, results seem to be minimal in practical terms.

Pioneering sustainability development paradigms are radically altering the discipline and re-building the theoretical basis on which political ecology rests, exploring the theoretical and methodological foundations of these discourses is expedient.

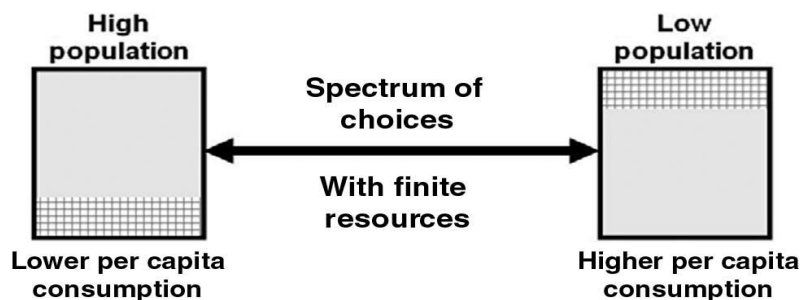
This 'new' political ecology emphasizes sustainable development in ecological theory and practices. Davidson and Hatt, et al., (2005) note that for much of the post-Second World War period, mainstream environmental study in general and political ecology in particular turned away from the fundamental ideas of detoxification of the environment articulated in the 1962 seminal book of Rachael Carson, *Morning Spring* in the United States to sustainability. The novel notion of development in the context of sustainability emerged in 1987 as already asserted following the Brundtland Commission report which arguably could be seen as a direct response to the 1972 report of the Club of Rome, *The Limits to Growth* (Meadows, et al., 1972) which was an attempt to re-focus attention back to earlier considerations on how to ameliorate the effects of unsustainable human activities to both human and non-human beings on the environment.

Newton(1992) argues that demographic and institutional structures emerging from different forms results environmental competition, shape policy choices and ultimately economic outcomes .Theoretical debates have shown that ecological Marxism have been pioneering works with emphasis on environmental democracy, environmental justice and equality(Shiva,1997; Amadi,2012). While established traditions in political ecology and environmental sustainability have been ongoing development discourse it has not fully integrated policy discourses into broader elucidation of terms such as green economy and eco-efficiency as researchers tend to draw more directly from mainstream debates. The commons, ecological footprints, entropy, eco imperialism, green accounting and more specifically green economy and eco-efficiency have been minimally emphasized.



Within the field of eco- efficiency, McDonough and Braungart, (2002) provide scholarly utility of the concept. There has long been a powerful tradition of viewing questions of eco- efficiency through an explicitly political ecology lens. This is most obvious in the ecological Marxian tradition in development theory which argues that environmental use is riddled with inevitable contradictions of inequality.

**Fig. 2 The sustainable development dialectic in a world of finite resources**



**Source:** Valentine (2010) 'Disarming the population bomb', *International Journal of Sustainable Development & World Ecology*, 17: 2, 120 — 132

In this tradition, ecological development is deeply and ineluctably rooted in the politics of power and inequality. Power relations in this perspective are, however, essentially class-based. Moreover, the class relations and institutions they entail are invariably shaped by external rather than domestic political competition.

In what might be called neo-classical ecological development debate, however, the emergence of an explicit new political ecology of development is more readily discernible (Odum, 1953; Saunders and Crosby, 1986; Devall and Sessions, 1985).

In all, environmental issues such as climate change remains daunting in human sustainable development. In a 2010 report, the World Bank estimates that between 2010 and 2050 it will cost developing countries \$70 billion to \$100 billion per year on average to meet their climate change adaptation needs. (World Bank, 2010) This poses a threat to sustainable development among the poor countries of the global south with low income and low HDI this 'institutional failures' links more

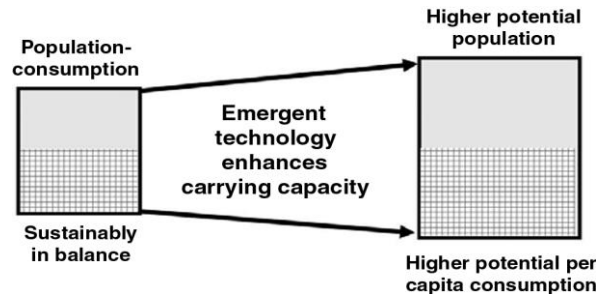
generally to external and internal contradictions of most of the economies in transition. For instance in sub-Saharan African (SSA) countries the colonial, post-colonial and neo-imperialism challenges have consistently posed core sustainable development problems that need to be grappled in any accurate analysis of sustainable development in SSA.

The internal discontent especially among the resource rich but impoverished periphery societies such as Nigeria's coastal areas- the Niger Delta, has been most closely associated with the works on "natural-resource curse". As Torvik (2009) puts it, why 'for every Nigeria or Venezuela there is a Norway or a Botswana'? Trying to understand this variation around the mean pulls the enquiry into two different areas of the literature on the resource curse, one theoretical and the other empirical (Adam and Dercon, 2010).

Collier (2007) has equally enriched the poverty and sustainable development debate especially in the context of institutional failure in the low income countries such as Africa arising from wars and conflicts. On the contrary, Slaughter (2004) and Fukuyama (2006) both noted that the problem may not entirely be "state failure" on the part of developing countries, but "organizational failure" on the part of developed countries.

Despite the very serious challenges involved in transforming the sustainability discourse into mainstream development and policy framings, the 'institutional failure' prognosis has led international engagement towards a focus on the use of the range of (external) policy instruments, with implications on capitalist exploitation and underdevelopment such as foreign aid. Clemens and Moss (2004), Easterly (2008) though have been sceptical on Western aid model.

Fig.3. Technological progress and the sustainable development dialectic



**Source:** Valentine (2010) 'Disarming the population bomb', *International Journal of Sustainable Development & World Ecology*, 17: 2, 120 — 13

In a 2013 seminal article, Muller, (2013) argues on the effects of persistent capitalist inequality, according to Muller; “Inequality is an inevitable product of capitalist activity, and expanding equality of opportunity only increases it -- because some individuals and communities are simply better able than others to exploit the opportunities for development and advancement that capitalism affords” .

Significantly, despite the sustainable development draw backs, the UNDP 2013 Human Development Report (HDR) released on March 14<sup>th</sup> in Mexico with the theme; “The Rise of the Global South” brings novel understanding of recent global economic changes perhaps following the emergence of the BRICS countries namely; Brazil, Russia, India China and South Africa .Conversely, Global North/ South dichotomy remains a central development issue. An inclusive policy discourse should be refocused on global asymmetry including ecological equity, eco- efficiency, environmental justice, equality, political equilibrium—through enforcing greater transparency and accountability on political elites along global power blocs—and more importantly among the high income countries in ways that promote choices that deliver ‘sustainable developmental outcomes’.

On its part, eco –efficiency seem to be a new concept in development studies. The term was formally coined and publicized in 1991 by Stephan Schmidheiny and his colleagues at the Business Council for Sustainable Development. Schmidheiny in a report, “ eco-efficiency: creating more value with less impact” explains; “In 1991, we

in the then Business Council for Sustainable Development were looking for a single concept, perhaps a single word, to sum up the business end of sustainable development. Finding no such concept on the lexicographer's shelf, we decided we would have to launch an expression. After a contest and much agonizing, we came up with eco-efficiency" (Schmidheiny, 2000) He further observes that; "In simplest terms, it means creating more goods and services with ever less use of resources, waste and pollution" (Ibid).

At the conceptual level, the WBCSD argues that, Eco-efficiency is achieved by the delivery of competitively-priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life-cycle to a level at least in line with the earth's estimated carrying capacity. (p.4) It is based on the concept of creating more goods and services while using fewer resources and creating less waste and pollution.

In the 1992 Earth Summit, eco-efficiency was endorsed as a new business concept and means for companies to implement Agenda 21 in the private sector. Strategies that have been linked to eco-efficiency include "Factor 4" and "Factor 10", which call for specific reductions in resource use, "natural capitalism", which incorporates eco-efficiency as part of a broader strategy, and the "cradle-to-cradle" movement, which claims to go beyond eco-efficiency in abolishing the very idea of waste.

According to Boulanger, all versions of eco-efficiency share four key characteristics: Confidence in technological innovation as the main solution to un-sustainability; Reliance on business as the principal actor of transformation. The emphasis is on firms designing new products, shifting to new production processes, and investing in R&D, etc., more than on the retailer or the consumer, let alone the citizen. Trust in markets (if they are functioning well); "Growthphilia": there is nothing wrong with growth as such.

Scholarly evidence has shown that recent sustainability enterprise has focused on technological solutions encompassing notions such as eco-efficiency, Factor 10, the Natural Step, the hydrogen economy and bio-mimicry (Beynus, 2002; Rifkin, 2002; Hawken et al., 1999 all cited in Schor, 2005). Several scholars have used the concept

in a number of ways, for instance a distinction has been made between eco-efficiency and eco-effectiveness, “Eco-efficiency, however measures, results in a net loss to resources and net gain to toxic, unsalable waste. When the focus is on efficiency, the mind-set is “cradle to grave.” The focus of eco-effectiveness, on the other hand, is “cradle to cradle” with a mind set that, as William McDonough puts it, waste must equal food. Design must not just decrease resource use and unsalable waste, it must create products whose waste can be put to use in either the “biological or technological metabolism.”(McDonough and Braungart, 2002)

We would explore more of this in the context of our broader analysis of the concept. Sustainable development which became frontal in the development discourse in the 1970s was highly ambitious in its aspirations.

### **Impacts of Growing Environmental Unsustainability**

A number of literature is discussing aspects of environmental impacts of growing unsustainability (Davidson and Hatt et al; 2005, Hart, 1997; Hobson, 2003). We hope to take on a few and most salient. For instance growing concern on detoxification of the environment shows that most manufacturing industries produce toxic substances that are inimical to human health. For instance, Durning and Ryan, (1997) have identified several toxins that accompany the manufacturing of those products.

The view that improvements in eco-efficiency are sufficient for achieving sustainability has also been challenged. Huesemann and Huesemann, (2007) using extensive historical evidence, demonstrate that increases in technological efficiency have not reduced overall resource use and pollution.

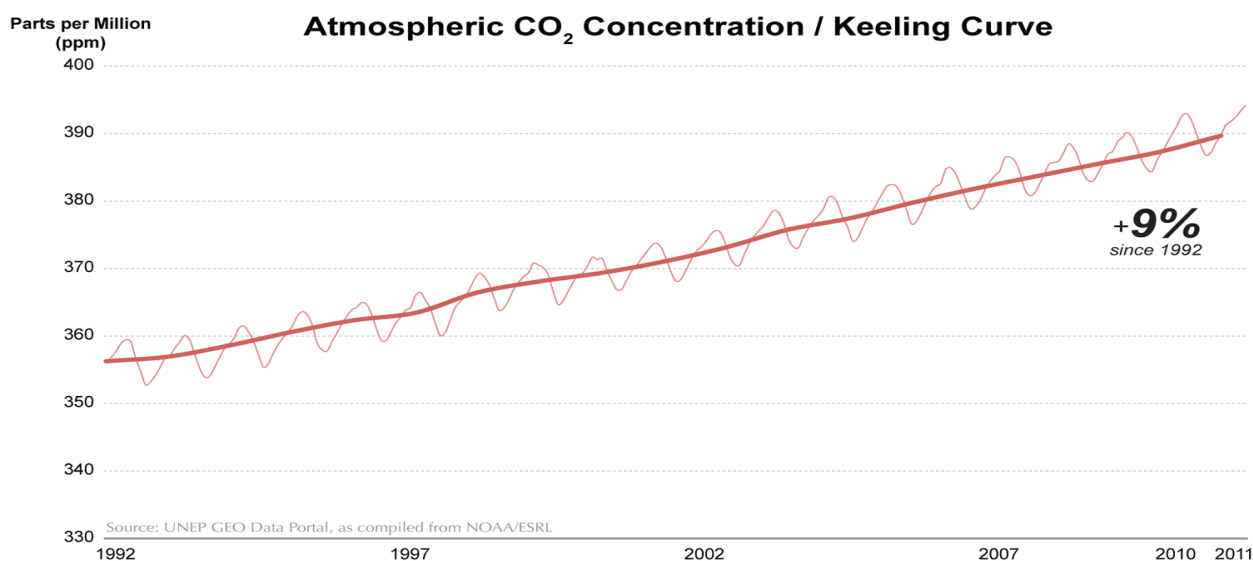
However, with “cradle-to-cradle”, growth is conducive to sustainability per se. This broader concept is called “Sustainable Production and Consumption” (SPC). “The concept involves changes in production and consumption patterns that lead to sustainable use (UNEP, 2009). Business has taken a key role in accelerating the use of this concept because businesses both consume and produce. Eco-efficiency is routinely a concept used because it combines performance along two of the three axes of sustainable development making it easier for academics and leading thinkers to tease out the associated social issues (Ibid). A partial assessment of

prevailing impacts of growing environmental unsustainability could be summarised as follows;

*CO<sub>2</sub> Emission:* In a modern economy, nearly all aspects of economic activity affect greenhouse gas – in particular, carbon dioxide (CO<sub>2</sub>) – emissions, and hence the global climate (Aldy and Stavins,2011).According to World Bank, Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.

As concern about the ever-increasing CO<sub>2</sub> emissions and their environmental impacts rises, the Montreal Protocol, responsible for the phasing-out of ozone-depleting substances (ODS), showcases how an international agreement can lead to success, with a decline of 93% in the consumption of ODS between 1992 and 2009. The "perhaps single most successful international agreement" not only helps to protect the Ozone layer, but leads to substantial co-benefits by reducing climate change, as many ODS are at the same time potent greenhouse gases (WMO/UNEP, 2010; UNEP,2012).

**Fig.4**

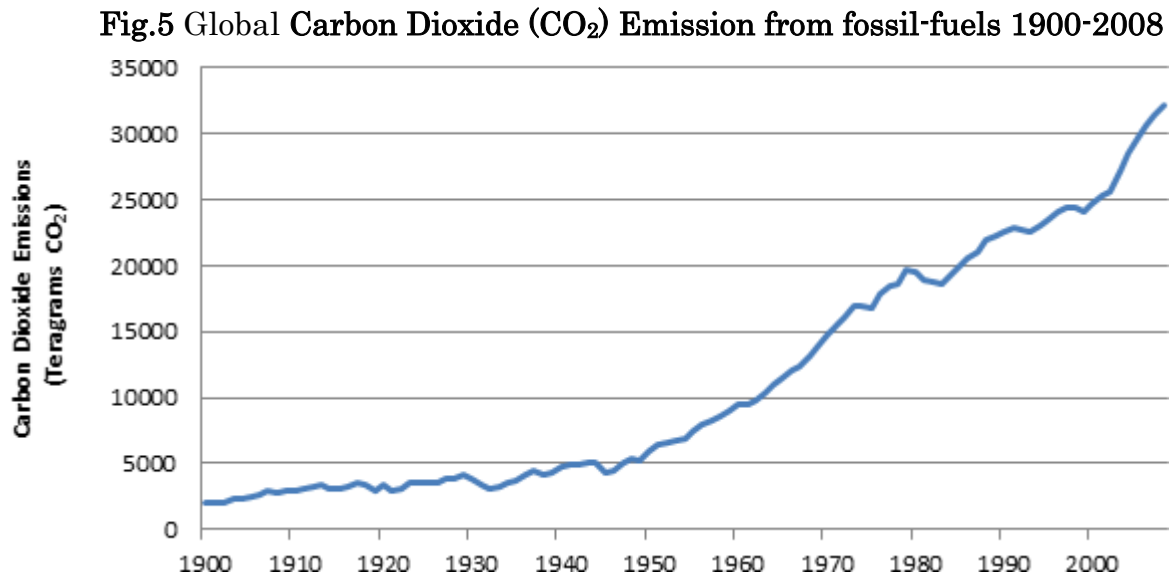


The average amount of CO<sub>2</sub> in the Earth's atmosphere shows a steady rise over the last two decades

**Source:**UNEP Geo Portal cited in UNEP,2012

Global carbon emissions from fossil fuels have significantly increased since 1900. Emissions increased by over 16 times between 1900 and 2008 and by about 1.5 times between 1990 and 2008 (UNEP, 2012).

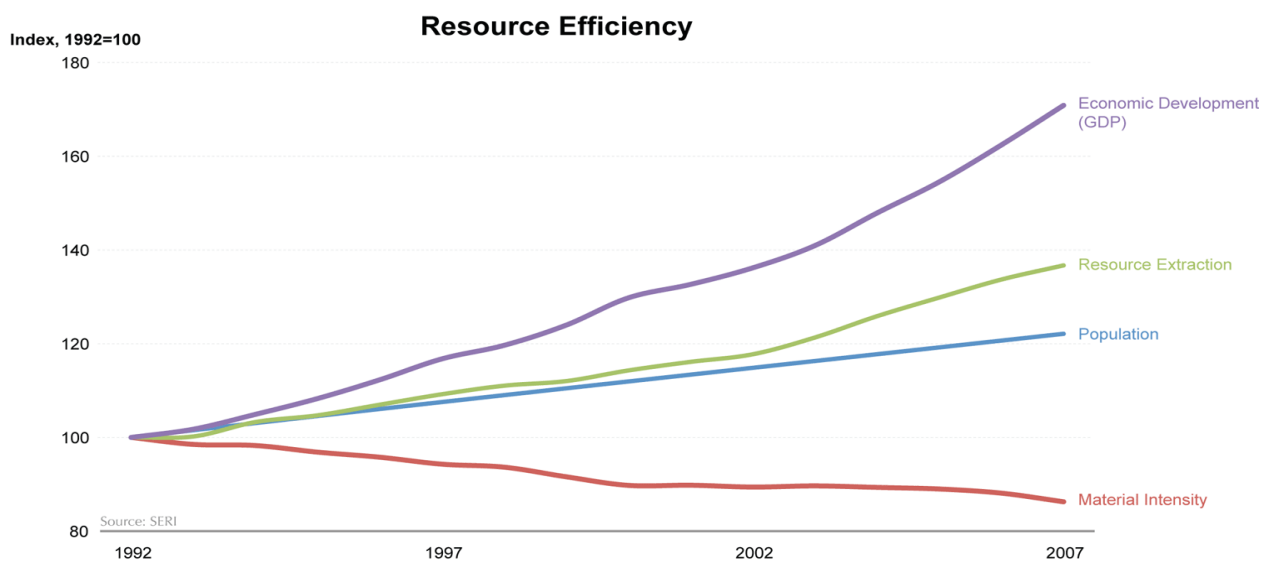
*Fossil Fuel:* With fossil fuels taking up over 80% of the total primary energy supply and their use rising by almost 40% between 1992 and 2009, emissions of CO<sub>2</sub> increased by 38%, reaching 36 000 million tonnes in 2010 (UNEP,2012). Although developing countries, through their general economic growth and many large-scale development projects, had the highest growth rates (64%), the difference of per capita emissions between developing and developed countries is still nearly a factor of 10. (UNEP, 2012). The steadily increasing amount of fossil fuels burned for generating energy and heating (26% of global anthropogenic GHG emissions, 2004), industry (19%), agriculture (14%), transport (13%) and other uses, leads to an increasing concentration of atmospheric CO<sub>2</sub>, which rose from 357 parts per million in 1992 to 389 early 2011, an increase of 9% (IPCC 2007). At the same time, global temperatures show a slow, but steady increase of about 0.2°C per decade (Hansen,etal; 2006; UNEP,2012).



**Source:** Boden, T.A., G. Marland, and R.J. Andres (2010). Global, Regional, and National Fossil-Fuel CO<sub>2</sub> Emissions. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001\_V2010

*Demography and Resource Efficiency:* In the past two decades, the number of people living on the planet increased by 26%, exceeding (end of October 2011) 7 000 million.(UNEP,2012) A positive, although in the short-term not directly remarkable aspect is that the population growth rate is slowly declining, dropping from 1.65% in 1992 to 1.2% in 2010, which represents a 27% decline in the growth rate over that period. One general trend in the population distribution is clearly visible: the urban population is increasing steadily, growing from 2 400 million people (43% of total population) to 3 400 million (50%) in 2009, an increase of 45%.(UNEP,2012) This trend in urbanization is expressed by the 110% increase of "megacities" (cities with at least 10 million people), from 10 in 1992 to 21 in 2010. These growth rates have brought new and emerging social, economic and environmental challenges. Although the share of the urban population living in slums in the developing world has dropped from 46% to 33% as a result of improved housing and sanitation, the absolute number of slum-dwellers has increased by 171 million people, raising their number to 827 million in 2010 (UNEP,2012).

**Fig.6**



More energy and natural resources are being consumed, but the amounts needed per product are declining. **Source:** SERI cited in UNEP, 2012



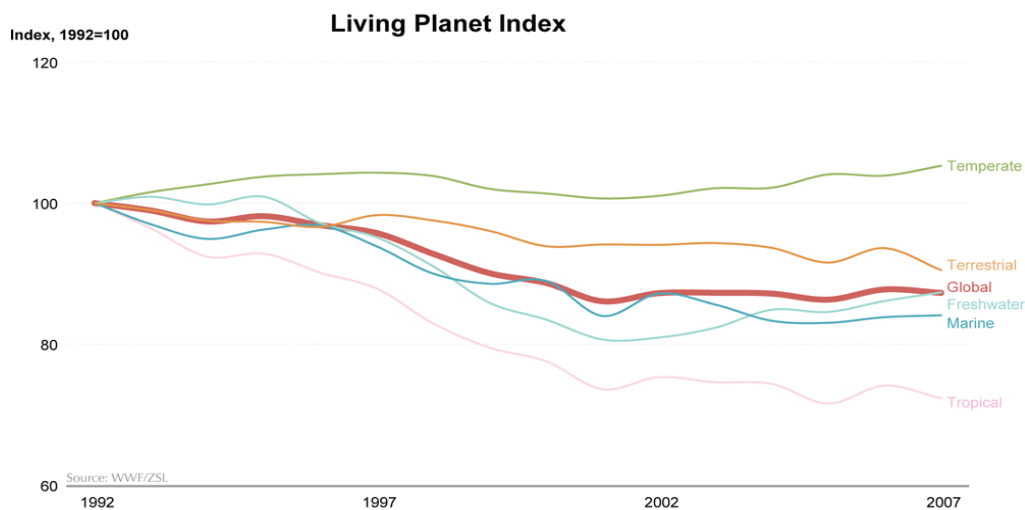
At the same time, international trade has increased between 1992 and 2008 from US\$ 9 to 36 million (an increase of 280%), before falling a bit in the aftermath of the economic crisis. As societies grow and become wealthier, demand for basic materials (minerals, fossil fuels, biomass) grew by over 40% between 1992 and 2005, from about 42 to nearly 60 thousand million tones. (UNEP, 2012) Nonetheless, there is a simultaneous decline in emissions, energy and material use per unit of output, indicating that resource efficiency is slowly increasing. At the same time, source and effect of the economic growth is a growing electricity production, increasing by 66% between 1992 and 2008, with developing countries showing more than three times larger growth rates (68%) than developed countries. (UNEP, 2012)

*Global Temperature and Sea level Rise:* Increase in global temperature is not occurring uniformly across the globe's latitudinal zones: far northern latitudes are seeing the most extreme changes in temperature, with increases of up to 3°C, while most of the other latitudes show variations around 0.5° (UNEP,2012). This impacts the Arctic sea ice extent, which has been steadily declining: its September extent decreased from almost eight to around five million square kilometers between 1992 and 2010, a drop of 35% (UNEP, 2012). Similar to the global atmospheric temperature, the average ocean temperatures are slowly increasing too, rising from 0.22°C above the long-term average in 1992 to nearly 0.5°C in 2010. Due to this rising sea-water temperature and resulting thermal expansion, as well as the melting of ice of the Arctic, Antarctic and Greenland ice sheets, the sea level has been rising globally at an average rate of about 2.5 mm per year between 1992 and 2011 (Bindoff etal, 2007, UNEP,2012). Increasing carbon dioxide concentrations in the air alter the chemistry of the ocean's surface, causing it to become more acidic (measured by the logarithmic pH) (Caldeira and Wickelt, 2003; UNEP, 2012). The ocean's pH declined from 8.11 in 1992 to 8.06 in 2007 (Feely, etal; 2009; UNEP,2012), having potentially significant consequences for marine organisms (UNEP, 2010).

*Deforestation and Biodiversity:* Although the rate of deforestation is slowing down, natural forests declined, especially in South America and Africa, by around 13

million hectares per year between 2000 and 2010, compared to 16 million hectares per year during the preceding decade (FAO, 2010; UNEP, 2012). This not only results in biodiversity loss, but also contributes 12-15% to global warming (van der Werf, et al, 2009; UCSUSA, 2011; UNEP, 2012). Forest plantations, especially in Asia and to a lesser extent in Europe, have seen an increase of 54% since 1990, covering 265 million hectares in 2010. Although certification for socially and environmentally responsible forestry shows an impressive annual 20% growth rate, only about 10% of forests worldwide were managed under the two biggest labels (FSC, PEFC cited in UNEP, 2012).

**Fig.7**



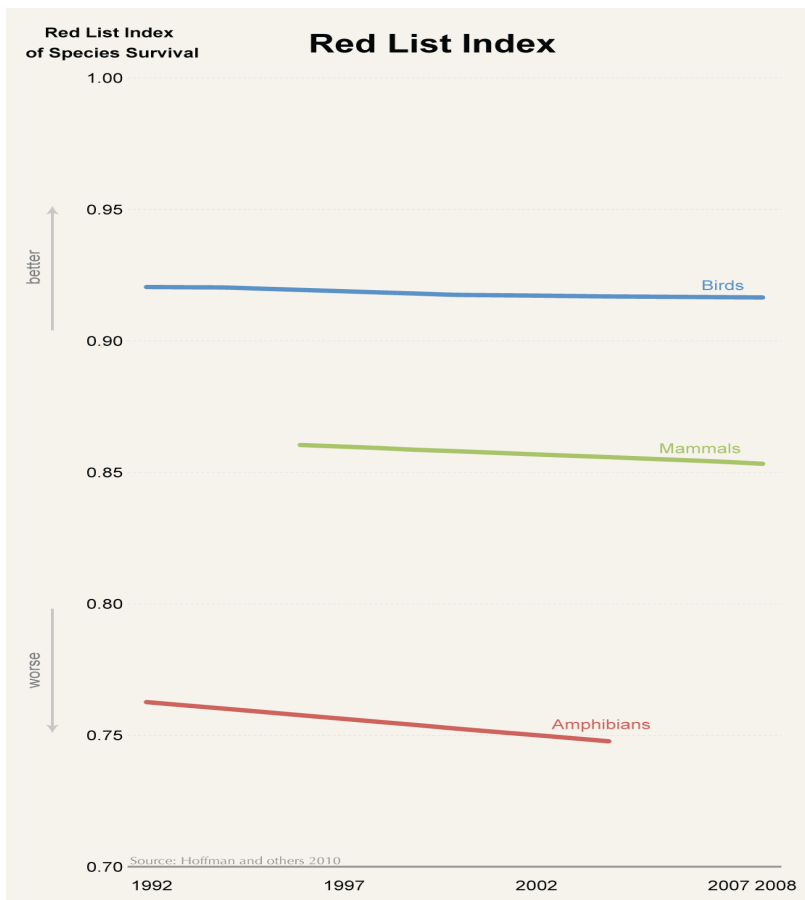
The Living Planet Index has declined by 12% at the global level and by 30% in the tropics

**Source:** WWF/ZSI cited in UNEP, 2012

With disappearing forests, industrial agriculture and sprawling urbanization, the health of the earth's ecosystems is decreasing. The Living Planet Index, which monitors almost 8 000 populations of over 2 500 vertebrate species, shows the most extreme decline - by 30% - in the tropical biome, and drops between 10-15% for marine and freshwater biomes, as well as in the global average (UNEP, 2012). This decrease is mirrored in the Red List Index, which measures the risk of extinction, and which shows general deterioration for birds, mammals and amphibians; each

year 52 vertebrate species move on Red List category closer to extinction (UNEP, 2012). In order to halt the constant loss of species and to protect biologically important zones, the total sum of protected land areas increased by 42%, covering 13% of the continents. Marine protected areas, however, cover only around 7% of coastal waters and just above 1.4% of the oceans (IUCN/UNEP, 2011; Toropova,etal;2010; UNEP,2012).

**Fig.8**



Each year 52 vertebrate species move one Red List category closer to extinction

Source: UNEP.2012

*Resource Depletion (Fish Stock):* Since 1992, a number of species have been on the decline. The proportion of fully-exploited fish stocks increased by 13% and overexploited, depleted or recovering stocks increased by 33%, reaching 52% and 33%, respectively, of all fish stocks. (UNEP, 2012) Only a small percentage of

stocks, around 15%, are under-exploited or moderately exploited; these stocks, however, saw a strong decrease of nearly 50% since 1992. This degradation nonetheless was accompanied by a slight decrease in marine fish catch. But with catches of around 80 million tonnes for marine fish and 10 million tonnes (with a steady growth, 66% between 1992 and 2009) for inland water fish, the pressure on water ecosystems remains high (UNEP, 2011b). Tuna, for example, is an economically important, globally-traded fish that is increasingly in demand by consumers. Catches increased dramatically, reaching 4200 thousand tonnes in 2008, an increase of 35%, leaving some tuna species on the edge of extinction (IUCN, 2011, Collette, et al; 2011; UNEP, 2012).

Similarly within the extractive industry are reports of environmental unsustainable consumption. Schor (2005) observed that the choice and activities of global extractive firms such as oil multinationals, the mining and manufacturing sub sectors, pose threats to sustainable environmental consumption.

She argued that; “First, it is important to remember that all manufactured goods have environmental effects associated with their production and in some cases, consumption” (Schor, 2005).

In many cases, these effects are substantial. Cotton production is pesticide intensive and depletes soil at a rapid rate. US-bound textiles use carcinogenic azo dyes (they have been banned in Europe) (Robins and Humphrey, 2000; Schor, 2002).

In oil exploitation and exploration in most coastal regions divergent environmental hazards ensue. For instance in the Niger Delta region of Nigeria, the activities of Multinational Corporations (MNCs) such as Shell, Exxon Mobil, Agip etc have resulted acid rain, oil spill, gas flaring etc, which reduces life expectancy and practically makes the environment uninhabitable.

Textile and computer chip production are extremely water intensive. Leather tanning for shoes, handbags, clothing and other goods uses highly toxic substances and is contributing to significant water pollution in regions with tanning industries, such as South Asia. Computer production involves the intensive use of toxic metals,

many of which are currently entering the waste stream ( Durning and Ryan, 1997 cited in Schor,2005).

In northern Nigeria unsustainable mining has been an issue in environmental degradation. Mining for the precious metals that are used in jewelry and watches is extremely destructive to ecosystems. In addition, mining activities employ highly toxic chemicals. (Schor,2005)

In the industrialized countries, the ecological effects of automobile production and use have been widely documented. Toys, perhaps the least ecologically significant of the commodities discussed above, are nearly all plastic, and produced with toxic chemicals and with oil-intensive processes.(Schor, 2005)She posits that, *Ceteris paribus*, increases in the consumption of all these products result in higher levels of toxic output, materials use, ecosystem degradation, and other negative environmental impacts, than is the case when lower quantities are consumed (Schor, 2005).

This should be positive from an environmental point of view. In any case, because the average footprint of US consumers is above that of almost all other consumers, any shift of purchasing power away from US consumers to other countries should on balance be environmentally beneficial. On consumption and environment in the South, (Myers and Kent, 2004; Bond, 2002).

In addition to the argument that imperial power is artificially depressing prices and raising consumption, there are other reasons to believe that US consumption is too high, both relative to the provision of leisure, aswell as inter-temporal allocation (Arrow, etal., 2004 cited in Schor, 2005 ).

### **Conclusion and Policy Recommendations**

The foregoing discussion has provided some insights on the trend of rising threats to sustainable development in a variety of ways. Both the TRUCOST analysis and the 2012 UNEP environmental reports provide seminal evidence on the increasing global environmental degradation at post Rio+20 Summit. These broad challenges are disruptive in several dimensions; environmentally, economically, technologically, industrially etc.

The point the papers aims to make is to provide possible global policy direction on the dynamics of contemporary research in sustainable development. At the same time, however, it explores deep tensions within the research programme and discovers a wide gap in evolving study on the core concepts of sustainable development such as ecological justice, green economy and eco-efficiency.

The paper highlights key normative questions. How should institutional and governance reforms and public policy interventions be structured to deliver sustainable development in an increasing environmental pressure and global tension arising from unsustainable and inequitable environmental consumption by the affluent countries? What is the best form of legal structure for a particular country? or will a universal policy preference be proffered? What is the appropriate mix between the ecological, political and economic needs of a society? And how could those needs be met sustainably?.

The pressures on the environment increases with increase in taste and consumption patterns which results increasing pressure from population growth and inequitable access to natural resources. While there is growing awareness on sustainability, its implementation has been minimal. This paper suggests that greening and eco –efficiency practices among corporate organizations have been at the margins of sustainable development.

Findings suggest that issues of green economy and eco-efficiency are yet to be prioritized in global sustainability discourse. The high income countries have been passive in effecting a measurable and sustainable environmental consumption pattern. A green economy must be “socially just, economically equitable, renewable, redistributive and responsible not foster a regime of global inequality and poverty. It must be aimed at bridging poverty gap and providing global natural resource transparency, thus placing emphasis on “green accountability” provide developing countries with financial resources and capacity assistance that might enable sustainable economic transition.

According to UNDP report,(2011) Democracy is important, but beyond that, national institutions need to be accountable and inclusive—especially with respect

to affected groups, including women— to enable civil society and foster popular access to information.(p.8)

The Rio +20 Report, emphasizes that green economy should contribute to “eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth’s ecosystems”.(Rio Report ,2012:10).This portends greater task for policy framings as this has not been prioritized .

Policy framings to bring ecological justice and equity back on track could be influential in sustainably reshaping unsustainable ecological use which is integral to this paper. As the unsustainable environmental practices taint the environment, integrated environmental consumption planning must be promoted among the high income countries for environmental optimization.

Effective legal instruments to foster sustainable development and renewable resource development should be enlarged to encompass, the provision of sustainable development tool kits for active sustainability practice.

Financial support for improving global sustainability awareness, and equality, holding the affluent societies accountable for pollution and depleting the environment is important to check unsustainability. Also making sustainable environmental use mandatory and providing global standards for measuring unsustainability and inequitable natural resource use is important.

The urgency to enrich debates in the ongoing sustainability thesis and advocate for ecological justice is necessary. To demonstrate this commitment is to proffer alternatives to current practices where unsustainable environmental use could be reduced to give renewed impetus to the clamour for green economy and eco-efficiency. This paper believes that such approach could check environmental waste and unsustainable consumption. It calls for Global Environmental Depletion Index (GEDDI), the aim is to device a global yardstick to ascertain and equate production and consumption with environmental depletion to provide a pro poor understanding of sustainable development.

Evidence has shown that most of the global summits have been devoid of effective implementation, there seem to be a wide gap between policy formulation and implementation despite its resolutions. Enforcing most of the global sustainability conventions have been a challenge. Sustainable development has become one of the many development challenges in everyday life that is all too susceptible to radically different meanings, thus requires more practical and participatory policy focus.

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