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Sustainablitiy in the use of natural resources: Who's benefit in question?

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Abstract
Individual people and their societies are intrinsically selfish, and this selfish attitude is responsible for many cases of over-exploitation of scarce natural resources. Colonization of the poorest countries by the westerners on one side, and the arrival of civilization through advanced technology and industrial expansion to the developing world by foreigners are responsible for many cases of over-exploitation of rich natural resources of the poorest countries. Over-exploitation of natural resources by few developed countries largely affects the very poorest countries (third world countries) and the future generation.

Keywords: Sustainability, natural resources use, future generation, developing world and western power

1. Introduction
"Without strong and multifaceted action by every person, the biosphere may become unable to sustain human life. At least coming generation will suffer deprivation and hardship unless current patterns of production, consumption and waste management are dramatically altered. Sustainable development needs to become the watchword and policy of all public agencies and officials and responsibility of every person." [1]`
Human persons and their enterprises are subsidized by the harvesting of resources from the environment (including those taken from ecosystems). These necessities must be available in the minimal amounts needed to sustain human life and in much larger quantities in economic systems that are growing overtime. The uses of natural resources and changes in environmental conditions are related to a sustainable economic system and the quality of human life. Ultimately, a sustainable economy is the one that run forever and that operates without a net consumption of natural capital-the rates of resource use are equal to or smaller than the rates at which the resources are regenerated or recycled. Many potential renewable and non-renewable resources have been used by humans in unsustainable manner. Either these resources were exclusively harvested (a condition known as over-harvesting or over-exploitation), or their post-harvest regeneration was inappropriately managed.
This short writing analyzes issues concerning sustainability of natural resource consumption and problems emerging from their increasing scarcity. Particularly, it addresses the issues of over-exploitation of natural resources vis-à-vis the existing and future generation, and the developing and developed nations. To addresses these issues the writer employed doctrinal research method because it mainly based on review of scientific literature which includes short writing on the subject matter or papers or journals.

2. The concept of Natural Resources and Sustainability
The term of natural resources includes "all natural resources" that exists in natural state and all system that are or can be useful to the man in the actual technological, economical and social circumstances [2]. Three kinds of reserves of natural resources can be identified [3]: continuous resources such as sunlight and wind, the use of which does not lead to a reduction in their size; renewable resources, such as wood and crops that can be harvested-but not faster than their rate of replenishment; and non-renewable resources such as fossils, fuels and

[1] Dinah Shelton and Alexander Kiss, Judicial handbook on environmental law (United Nations Environmental Programme (UNEP), 2005)), Taken from message part, Page III
[2] Carmen Zaharia and Daniela Suteu, The natural resources and Sustainable development (Cercetari Agronomice in Moldova, Vol. XLI V, No 1 (145) /2011), in Flavin C., 2002- Starea lumii (The world state), Edit. Technica, Bucuresti Romania, p 94
[3] H. Muilerman & H. Blonk, Towards sustainable use of natural resources (Stichting Natuur en Milieu, January 2001), p 2

minerals. The last are created by very slow geological process, so slow in human terms that their use diminishes the available stocks. Resources such as clean water, fertile soils and biodiversity, given the time required for their recovery, can also be considered to non- renewable. Resources are the back bone of every economy and provide two basic functions- raw material for the production of goods and services, and environmental service.

Sustainability is the process suggested to improve the quality of human life within the limitations of the global environment. It involves solutions for improving human welfare that does not result in degrading the environment or impinging on the well-being of other people. Although there is no general agreement about the precise meaning of sustainability, there seems to be a general consensus that three basic concepts are involved in sustainable measures [4]: living within certain limits of earths' capacity to maintain life; understanding the interconnections among the economy, society and environment; and maintaining a fair distribution of resources and opportunity for this generation and the next. Sustainability seen as the optimization of natural alternatives that each local, region, or nation has (through their individual cultural and environmental differences) in the process of development [5].

3. Sustainability of Natural Resource use

The world's dominant cultures have developed an ethic that presumes that humans have the "right" to take whatever they want from nature for subsistence or economic benefits. This is an expression of anthropocentric world view. Particularly noteworthy is the so called Judeo-Christian ethic, which is based on the biblical story of creation. In that story, God directed humans to "be fruitful, and multiply, and replenish the earth, and subdue it," and to "have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth and over every creeping thing that creepeth up on the earth". From purely ecological perspective, this is an arrogant attitude, but it is typical of the world's dominant cultures and religions. Modern technology ethics have developed from this commanding world view and are now used to legitimize the rapid over exploitation of natural resources and the collateral ecological damage.

Natural resources are perceived as boundless. Many people believe that nature and its resources are unlimited in their extent, quantity, and productivity. In actual fact, earth has limited stocks of resources available for use by humans, and most of these are being rapidly depleted. Individual people and their societies are intrinsically self-interested. This attitude is responsible for many cases of over-exploitation of resources in order to optimize short-term profit. Over-exploitation of natural resources is responsible for environmental, social, economic and other problems.

4. Sustainability in the Use of Natural Resources and its Impact on Environment

Over-exploitation of natural resource use affects both physical and biological components of the environment. The following are some of the environmental impacts because of the use of a number of important groups of natural resources, throughout the whole chain from extraction to disposal.

A. Climate Change: Over-exploitation of forest which is one important part of nature necessary for human persons and other living things can change the global change of energy not only through the micrometeorological processes but also by increasing the concentration of carbon dioxide in the atmosphere [6] because carbon dioxide absorbs thermal infrared radiation in the atmosphere. Climate change affects wind flows, water vapour flows and absorption of solar energy thus clearly influencing local and global climate [7]. Climate change poses an enormous threat to the lives and well-being of individuals and communities across the world. The harmful impacts of climate change include sudden-onset events that pose a direct threat to human lives and safety, as well as more gradual forms of environmental degradation that will undermine access to clean to water, food, and other key resources that support human life [8]. Climate change is contributing to drought, ecosystem degradation, and food shortages across the world [9]. Some regions are hit harder than others, with more clearly attributable linkages to climate change-for example, sea level rise has adversely affected the safety and livelihoods of many costal inhabitants [10] and rising temperatures are causing significant changes in the Arctic ecosystem that support many indigenous communities [11].

The Intergovernmental Panel on Climate Change (IPCC) predicts that climate change "reduce the population, vigor, and viability" of many species, especially those with spatially restricted populations, and will increase the extinction risk of many species [12]. Climate-related hazards, including gradual changes and extreme weather events, will affect peoples' livelihoods directly through impacts such as loss in crop yields; the destruction of natural resources, homes, and properties; and displacement [13]. Climate changes also have indirect effects on livelihoods like political instability and large-scale conflict, individual and house hold-level disturbances [14]. Thus, climate change is one of many factors that can perpetuate a vicious cycle of poverty, deprivation, and inequality [15].

Climate change contributed to health problems and the major health impacts include: greater risk of injury, disease, and death due to more intense heat waves and fires;

[4] Adelina Maria and Luciana Camargo, Sustainable resource use and Sustainable development: A contradiction? (Zentrum fur Entwicklungsfourschung (ZEF) Center for development research University of Bonn, November, 2004), p 4

[5] Id, p 6

[6] Pinker, R. 1980, the microclimate of a dry tropical forest. Agricultural Meteorology 22:249-265.

[7] Chomitz, K. M *et al.*, at loggerheads? Agricultural expansion, Poverty reduction, and Environment in the tropical forests. World Bank Policy Research Report. World Bank, Washington DC (2007).

[8] UNEP in cooperation with Colombia Law School, Climate change and Human Rights (December 2015), p 2

[9] The Intergovernmental Panel on Climate Change (IPCC)'s, Climate Change, 2014: Impacts, Adaption, and Vulnerability, Contribution of the Working Group II to the fifth assessment report of the Intergovernmental Panel on Climate Change (Cambridge University Press 2014).

[10] Anthony Oliver-Smith, Sea Level Rise and the Vulnerability of Costal Peoples: Responding to the Local Challenges of Global Climate Change in the 21st Century, UNU-EHS Publication No. 7/2009 (July 2009).

[11] Sheila Watt-Cloutier, Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States (December7, 2005)

[12] IPCC (2014), Id n (9) at 275

[13] Id n (8), p 7

[14] IPCC (2014), Id at 809

[15] IPCC (2014), Id at 817

increased risk of under nutrition resulting from diminished food production in poor regions; health consequence stemming from lost work capacity and reduced labor productivity in vulnerable populations; increased risk of food, water and vector-borne disease [16]. Climate change will threaten human security [17] by increasing the scarcity of key resources (e.g., water, food, land, and other natural resources), undermining livelihoods, compromising culture and identity, increasing displacement and migration, and challenging the ability of states to provide the conditions necessary for human security. Each of these impacts can directly affect human security, and can also contribute to political instability and violent conflict [18]. One of the most important ramifications of over-exploitation of natural resources, for instance, deforestation is its effect on the global atmosphere. Heat build-up in the atmosphere is one of the important problems of the century known as green house effect is the partly caused by the result from over exploitation of natural resources [19]. Over-exploitation of natural resources, for instance, deforestation contributes to global warming which occurs from increased atmospheric concentrations of green house gases (GHG) leading to net increase in the global mean temperature [20].

B. Loss of Biodiversity: "Biodiversity" include all variety of life forms. Biodiversity is the number of different varieties, among living things. Biodiversity can be expressed in number of ways, which includes the number of genetic strains (differences) within species and the number of different ecosystem in an area. The most common expression of biodiversity is the number of different species, within a particular area (local biodiversity), or in a specific habitat (habitat biodiversity) or in the world (global biodiversity). There is a lot of concern about preserving biodiversity. The one good reason for preserving biodiversity is that it provides wide variety of products for human use and welfare. It is a great potential resource for agriculture, medicine and industry. From natural resources, mainly forest, serve as storehouses of biodiversity and consequently an over-exploitation of these forests (deforestation), fragmentation, and degradation destroys the biodiversity as a whole and habitat for migratory species including the endangered ones [21]. Tropical forests support about two thirds of all known species and contain 65 percent of the world's 10,000 endangered species [22]. According to World Health Organization (WHO), about 80 percent of the world's population relies for primary health care at least partially on tradition medicine [23]. The increasing demand for land, agriculture, forestry and buildings will lead to loss of areas of great value for biodiversity [24]. The biodiversity loss and associated large changes in forest cover could trigger abrupt, irreversible and harmful changes. These include regional climate change including feedback effects that could theoretically shift rainforests to savannas and the emergence of pathogens as growing trade in bush meat increases contact between humans and animals [25]. Loss of biodiversity is a cause for human-animal conflicts, for instance, elephant habitat located at the northern West Bengal India is a part of Eastern Himalaya Biodiversity which is characterized by a high degree of fragmentation. The heavy fragmentation of this habitat has resulted into an intense human-elephant conflict causing not only in loss of agricultural crops but also human and elephant lives. Mortality of about 50 persons and 20 elephants was reported due those severe human-elephant conflicts from this hotspot area annually [26].

C. Water and Soil Resource Loss: over-exploitation of natural resources, specially, forest disrupts the global water cycle [27]. With removal of part of natural resources (i.e., forest), the area cannot hold as much water creating drier climate. Lack of forest cover has resulted in water flowing off the ground, washing away the top soil which is finally deposited as silt in the river beds. Over-exploitation of natural resources (i.e., Deforestation) can also result into watersheds that are no longer able to sustain and regulate water flows from rivers and streams [28]. Once they are gone, too much water can result into downstream flooding, many of which have caused disasters in many parts of the world [29]. This downstream flow causes soil erosion thus also silting of water courses, lakes and dams [30]. The long term effect of over-exploitation of natural resources (for instance, deforestation) on the soil resource can be severe. Clearing the vegetative cover for slash and burn farming exposes the soil to the intensity of the tropical sun and torrential rains. The effects of over-exploitation of natural resources on water availability, flash floods and dry season flows depend on what happens to these countervailing influences of infiltration and evapotranspiration-the sponge versus the

[16] IPCC (2014), Id at 713
[17] UNEP in cooperation with Colombia Law School, Climate change and Human Rights (December 2015), in the IPCC report, "Human Security" defined as a "condition that exists when the vital core of human lives protected, and when people have the freedom and capacity to live with dignity.", at 759
[18] Id n (8), For example, in a report on Syria, the former Special Rapporteur on the Right to Food described how severe droughts, exacerbated by climactic changes in the region, led to crop failures and food shortages, thus undermining the right to food. Olivier De Schutter, Special Rapporteur on the Right to Food, Addendum, Mission to the Syrian Arab Republic, U.N. Doc. A/HRC/16/49/Add.2 (Jan. 27, 2011). Since then, the drought and food shortages have contributed to political instability and violent conflict, resulting in deaths, injuries and displacement of millions of people. See also U.N. Secretary-General, Climate change and its possible security implications: Report of the Secretary-General, UN Doc. A/64/350 (Sept. 11, 2009), p 8
[19] Anonymous, Global forest resources assessment, 2010-Main Report. FAO Forestry Paper 163. Rome, Italy, (2010), p 340
[20] Sumit Chakravarty, *et al*., Deforestation: Causes, Effects and Control Strategies (ICAR Research Complex for Eastern Region, Research Center, Plandu Ranchi, India), p 15
[21] Sumit Chakravarty, *et al*., Id at 16
[22] Myres, N. and Mittermeier, R. A., Biodiversity hotspots for conservation priorities. Nature 403: 853-854.
[23] Sumit Chakravarty, *et al*., Id at 16
[24] H. Muilerman & H. Blonk, Towards sustainable use of natural resources (Stichting Natuur en Milieu, January 2001), p 6
[25] Anonymous, Ecosystems and Human Well-Being: Synthesis. Millennium ecosystem Assessment. Island Press, Washington DC (2005).
[26] Sukumar, R. *et al*., Study of elephants in Buxa Tiger Reserve and adjoining areas in northern West Bengal and preparation of Conservation Action Plan. Final Report. Center for Ecological Science, India Institute of Science, Bangalore (2003) & Mangave, H.R., A study of elephant population and its habitats in northern west Bengal, North East India. M. Sc. Thesis, Bharathidasan University, Unpubl (2004).
[27] Bruijnzeel, L.A., Hydrological functions of tropical forests: not seeing the soils for the trees? Agriculture, Ecosystem and Environment 104: 185-228 (2004).
[28] Sumit Chakravarty, *et al*., Id at 16
[29] Id at 16
[30] Id at 16

fountain [31]. Over-exploitation of natural resources and other land use changes have increased the proportion of the basin subject to erosion and so over the long run have contributed to siltation. Heavy siltation has raised the river bed increasing the risk of flooding especially in Yangtze River basin in China, the major river basins of humid tropics in East Asia and the Amazonian basin [32]

D. Social Consequence and Loss of Wild Life: Over-exploitation of natural resources, in other words, is an expression of social injustice [33]. The social consequences of over-exploiting natural resources are many, with often devastating long-term impacts [34]. The most immediate social impact of over-exploitation of natural resources occurs at the local level with the loss of ecological service provided by the natural resources [35]. Natural resources affords humans valuable services such as erosion prevention, flood control, water treatment, fisheries protection and pollination functions that are particularly important to the world's poorest people who rely on natural resources for their every day survival [36]. By destroying natural resources we risk our own quality of life, gamble with the stability of climate and local weather, threaten the existence of other species and undermine the valuable services provided by biological diversity [37]. For indigenous communities, the arrival of civilization usually means the destruction/change of their traditional life-style and the breakdown of their social institutions mostly with their displacement from their ancestral area. The intrusion of outsiders destroys traditional life styles, customs and religious beliefs which intensifies with infra-structure development like construction of roads which results into frontier expansion often with social and land conflicts [38]. The shrinkage of green cover has adverse effects on the stability of ecosystem. Poaching is another factor causing depletion of wildlife. In Africa, in recent years, nearly 95 percent of the black rhino population has been exterminated by poachers for their horns and over one third of Africa's elephants have been wiped out for ivory. The scarlet macaw once common throughout South America has been eliminated from most of its range in Central America. Several species of spotted cats such as the ocelot and jaguar are in danger of extinction due to demand of their fur.

5. Sustainability in the Use of Natural Resources and Future Generations

'Because we can expect future generations to be richer we are, no matter what we do about resources, asking us to refrain from using resources now so that future generations can have them later is like asking the poor to make gifts to the rich [39]. The recent and valid concern over environmental externalities focuses mainly on the costs that we and our contemporaries must bear when we pollute the air, water and soil by industrial expansion, deforestation and other aspects of development [40]. Concern over these externalities is intended to ensure that the benefits from contemplated action exceed its costs and that those who bear its costs are adequately compensated [41]. Sustainability of natural resource use requires that we look at the earth and its resources not only as investment opportunity, but as trust passed to us by our ancestor for our benefit, but also to be passed on to our descendants for their use [42]. The theory of intergenerational equity states that we, the human species, hold the natural environment of our planet in common with other species, other people, and with past, present and future generations [43]. It also adds that all generations have an equal place in relation to natural system, and that there is no basis for preferring past, present or future generations in relation to the system [44]. Every generation should use the natural system to improve the human condition [45]. But when one generation severely degrades the environment, it violates its intergenerational obligations to care for the natural system [46]. Future generations should inherit the earth in as good a condition as did their ancestor and with at least comparable access to its resources [47]. This requires that each generation leave the planet in no worse condition than it received it, and to provide succeeding generation's equitable access to its resources and benefits [48]. This has connection with John Rawls 'theory of justice', which argues that the fairest allocation of 'primary social goods' in a society can be indentified using a 'veil of ignorance', where if an individual does not know what her allocation of primary social goods is, she will choose to maximize the position of the worst-off member of society [49]. The theory on intergenerational equity neither authorize the existing generation to exploit natural resources to the exclusion of the future generations, nor impose unreasonable burdens on the present generation to meet indeterminate future needs. *For instance*, as for non-renewable resources, like fossil fuels and minerals, their use reduces the stock available for future generations. But this does not mean that such resources should not be used. In general the rate of depletion should take into account the criticality of that resource, the availability of technologies for minimizing depletion, and the likelihood of substitutes being available. Thus land should not be degraded beyond reasonable recovery. With minerals and fossil fuels, the rate of depletion and the emphasis on recycling and economy of use should be calibrated to ensure that the resource does not run out before

[31] Bruijnzeel, L.A., Hydrological functions of tropical forests: not seeing the soils for the trees? Agriculture, Ecosystem and Environment 104: 185-228 (2004).
[32] Bruijnzeel, L.A., *et al*., Forest, water and people in the humid tropics: an emerging view (2005), & Bonell, M. and Bruijnzeel, L. A., Forest, Water and People in the Humid Tropics, eds. (Cambridge University Press, Cambridge United Kingdom)
[33] Colchester, M. and Lohmann, L., The struggle for land and the fate of forest. Zed books, London (1993)
[34] Sumit Chakravarty, *et al*., Id at 17
[35] Sumit Chakravarty, *et al*., Id at 17
[36] Id at 17
[37] Sumit Chakravarty, *et al*., Id at 17
[38] Schmink, M. and Wood, C., Contested Frontiers in Amazonia. Colombia University Press, New York (1992).
[39] Christine Carmody, Considering future generations- Sustainability in theory and practice (November 2012), p 1
[40] Edith Brown Weiss, In fairness to future generations and sustainable development (1989)
[41] Id
[42] Volkert Beekman, Sustainable development and Future generations (Journal of Agriculture and Environmental Ethics, January 2004), p 19-20
[43] Volkert Beekman, id at 20
[44] Volkert Beekman, id at 21
[45] Volkert Beekman, id at 21
[46] Volkert Beekman, id at 21
[47] Tsegai Berhane and Merhatbeb Teklemedhn, Environmental Law (Teaching Material, Prepared under the sponsorship of the justice and legal system research institute, Ethiopia, 2009), p 68
[48] Id at 68
[49] Primary social goods are defined by John Rawls as liberty, opportunity, income, wealth, and the bases of self respect.

acceptable substitutes are available [50]. The theory of intergenerational equity intended to achieve a reasonably secure and flexible natural resource base for future generations, which they can use for their own needs and preferences [51]. And it constrains the present generation's use of Earth's resources [52]. In connection to this in *Brundtland report* it is provided that, if needs are to be met on a sustainable basis the Earth's natural resource base must be conserved and enhanced. Major changes in policies will be needed to cope with industrial world's current high levels of consumption; the increases in consumption needed to meet minimum standards in developing countries, and expected population growth. However, the case for the conservation of nature should not rest only with development goals. It is a part of our moral obligation to other living beings and future generations [53]. Sustainability of the whole socio-ecological system is because of the existence of important interlinkages between society (human) and nature. Sustainability of the whole socio-ecological system (strong sustainability) holds that different types of capital are not necessarily substitutable, so that minimum amounts of a number of different types of capital (economic, ecological and social) should be independently maintained, in real physical/biological terms [54]. The major motivation for this insistence is derived from the recognition that natural resources are essential inputs for economic production, consumption or welfare that cannot be substituted for by physical or human capital [55]. It is understood that some environmental components are unique and that environmental processes may be irreversible. Therefore, sustainability of the whole socio-ecological system (strong sustainability) implies that the aggregate amount of the natural capital has to be maintained essentially at the present and for the next generations. Under this notion, any development path that leads to an overall reduction of the stocks of natural capital (or, specially, to a decline below the minimum) fails to be sustainable even if other forms of capital increase [56]. Sustainability of the whole socio-ecological system (strong sustainability) favors a more fundamentalist mode of ecological solidarity with the earth and all forms of life. Here, the preservation of the environment- a Biocentric viewpoint- is the ethical precondition for sustainability. Pursuing ecological sustainability by way of diminishing social and economic concerns, even to the point of excluding humans or increasing human poverty, is not acceptable for the majority of us [57]. But what is acceptable by the majority is 'wise use' of all natural resources usable in the earth, including recycling and other means of efficient utilization, as well as ensuring that the exploitation of these resources does not exceed their regeneration. Overall, however, there is more bad news than good about all natural resources consumable by human persons on the earth and their regenerations of many potentially renewable resources. Although some renewable are being used in a manner that is supportive of their future availability, many are not. If this situation does not change for the better in the near future, there will be grim consequences for the human economy, and also for future generations, biodiversity and natural ecosystems.

6. Sustainability in the Use of Natural Resources and Developing World

Growth that is accompanied by over exploitation of natural resources or degradation or conversion of natural capital on which poor people mostly from developing world depend for their livelihoods (for example, the conversion of open access natural forests into privately-held plantations) aggravates poverty [58]. The poor (developing world) are often highly dependent for their livelihoods on natural resources, which include fallow fields, forests, fishing grounds, pasture land and wetlands [59]. These are a source of a variety of goods including food, fodder, building materials, fuel and medicinal plants among others, which are important source of sustenance or income for landless poor [60]. Compared to developed world economies with diversified economies structures, natural resources based economies of the developing world are particularly exposed to large terms of trade shocks caused by sharp falls in the prices of their main export commodities. Wealthy countries or the erstwhile colonial powers having deficit of their own natural resources are mainly sustaining on the resources of the financially poorer countries those are generally rich in natural resources. Twenty percent of the world's population is using 80 percent of world's resources [61]. Unfortunately also the governments of these poor resource rich countries had generally adopted the same growth-syndrome as their western neighbors or their erstwhile colonial master giving emphasis on maximizing exports, revenues and exploiting their rich natural resources unsustainably for short-term gains. Moreover, corruption in government, the military and economic powers is well known. The problem is further worsened by the low price of the most third world exports being realized in the international market [62]. Erstwhile colonies of the colonial powers like Britain, France, Spain or Portugal are now the third world countries or the developing nations mostly have the tropical rainforests were exploited for their natural resources and their indigenous people's rights destroyed by the colonial powers [63]. Colonialism turned previously self-sufficient economies (i.e., developing world's) into zone of agriculture export

[50] Brundtland Report, Publication by World Commission on Environment and Development (WCED), 1987, pp 45-46. Brundtland report, also called our common future, publication released in 1987 by the World Commission on Environment and Development (WCED) that introduced the concept of sustainable development and described how it could be achieved. Sponsored by the United Nations (UN) and chaired by Norwegian Prime Minister Gro Harlem Brundtland, the WCED explored the causes of environmental degradation, attempted to understand the interconnections between social equity, economic growth, and environmental problems, and developed policy solutions that integrated all three areas.
[51] Volkert Beekman, id at 23
[52] Volkert Beekman, id at 23
[53] Brundtland Report, p 15
[54]Gilberto Gallopin, A systems approach to sustainability and sustainable development (March 2003), p 15
[55] Gilberto Gallopin, id at 16
[56] Ayres, R.U., *et al*., Weak versus Strong Sustainability. Tinbergen Institute Discussion Papers 98-103/3 Tinbergen Institute (web site) (RePEc:dgr:uvatin:19980103); http://netec.ier.hit-u.ac.jp/WoPEc:dgr:uvatin:19980103.html
[57] Gilberto Gallopin, id at 15
[58] Organization for Economic Cooperation and Development (OECD), Natural Resources and Pro-Poor Growth: The Economics and Politics (2008), p 36
[59] Id at p 38
[60] Id
[61] Sumit Chakravarty, *et al*., Id at 11
[62] Colchester, M. and Lohmann, L., The struggle for land and the fate of forest. Zed books, London (1993)
[63] Id

production (exploitation of their natural resources) [64]. This process continues even today in different form of exploitation and the situation is worsening. Pursuing the guided development agenda, the financially poorer countries are on a heavy international debt and now feeling urgency of repaying these huge debts due to escalating interest rates. Such a situation compels these debt ridden poorer countries to exploit their rich natural resources partly to earn foreign exchange for servicing their debts. Poverty and overpopulation in developing worlds are believed to be the main cause of over-exploitation of natural resources according to international agencies such as FAO and inert governmental bodies [65]. There is good evidence that rapid population growth is a major indirect and over-arching cause of over-exploitation of natural resources in third world countries. Arguably increasing population is the biggest challenge of all to achieve sustainable management of human life support systems and controlling population growth is perhaps the best single thing that can be done to promote sustainability [66]. Poverty, while undeniably responsible for much of the damage to natural resources, has to a large extent been brought about by the greed of the rich industrialized nations and the third world elites who seek to emulate them. For instance, in tropical countries, pressure from human settlement comes about more from inequitable land distribution than from population pressure. Generally, most of the land is owned by small but powerful elite which displaces peasant farmers in to rich natural resource area. So long as these elites maintain their grip on power, lasting land reform is difficult to achieve and over-exploitation of natural resources continuous unabated [67]. Therefore poverty is well considered to be an important underlying cause of over-exploitation of natural resources by small-scale farmers [68]. The population of the developing world often lacks the finance necessary for the investments to increase yields on the existing cleared land [69]. In third world countries over-exploitation of natural resources including clearing for agricultural activities is often the option available for the livelihoods of peasant farmers [70]. The relation between development and over-exploitation of natural resources is complex and dynamics [71]. There is a view that development will produce further capital and incentive to expand and exploit more natural resources. Technological innovations by developed worlds to developing worlds make farming profitable for foreigners either prompting the expansion of farms by clearing natural resources like forest or attract new farmers to forest frontiers [72]. Many development policies have failed because they have supported either wittingly or unwittingly the development of those who already have land, power, influence and political clouts. This further alienates the rural poor of the developing world and puts the pressure back on over-exploitation of natural resources. Poor farm households in developing worlds have little incentive to care about the environmental effects of their actions. Such unaccounted costs give rise to economic failures such as local market failures, policy failures and global appropriation failures [73]. Policy failures or market distortions are result of misguided intervention or unsuccessful attempt to mitigate failures resulting in worse outcomes [74]. For instance, lack of respect of traditional natural resources use rights makes property rights over natural resources uncertain and could encourage short-term exploitation of these natural resources like forests rather that long-term sustainable use of these natural resources. Rampant consumerism by the developed countries frequently has been claimed as a major reason for over-exploitation of natural resources in the developing world [75]. The opening of tropical countries to the world commodity markets accelerated over-exploitation of natural resources [76]. This is against the principle of sovereign right of states to exploit their own natural resources. Or it is against intra-generational equity in economic system that seeks to redress the imbalance in wealth and economic development between the developed and developing worlds by giving priority to the needs of the poor mainly from developing world. Or it is against the principle of sustainable development that entails reorientation of the world's economic system by which the burdens of environmental protection will fall more heavily on the developed world's and the economic benefits will accrue more significantly to the underdeveloped south from the common benefit of all. Today developing countries not only have problems of securing a more equitable balance of resource consumption, but their control over their own natural resources and environmental policies significantly limited by external indebtedness and resulting dependence on short-term resource exploitation, influenced by patterns of international trade within the WTO (World Trade Organization) system [77]. It is in this context that the failure of the present WTO system to take greater account of environmental concerns or of the development interests of the developing countries may become structural inhibition on implementation of the policies adopted at Rio in 1992 [78].

[64] Id

[65] Scrieciu, S.S., Economic causes of tropical deforestation- a global empirical application (2003). Development Economics and Public Policy Working Paper 4. Institute of Development Policy and Management, University of Manchester.

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7. Conclusion

The Earth has limited stocks of resources available for use by humans, and most of these are being rapidly depleted. Individual people and their societies are intrinsically self-interested. This attitude is responsible for many cases of over-exploitation of natural resources in order to optimize short-term profit. Over-exploitation of natural resources is responsible for environmental, social, economic and other problems. Over-exploitation of natural resources use affects both physical and biological components of the environment causing climate change, loss of biodiversity, water and soil resource loss, wild life loss and social problems. By destroying natural resources we risk our own quality of life, gamble with stability of climate and local weather, threaten the existence of other species and undermine the valuable services provided by biological diversity. For indigenous communities mainly from the developing world, the arrival of civilization usually means the destruction/change of their traditional life-style and the breakdown of their social institutions mostly with their displacement from their ancestral land. The theory of intergenerational equity states that all generations have an equal place in relation to natural system, and that there is no basis for preferring past, present or future generations in relation to the system. Every generation should use the natural system to improve the human condition. But when one generation severely degrades the environment, it violates its intergenerational obligations to care for the natural system. Future generations should inherit the earth in as good a condition as did their ancestor and with at least comparable access to its resources. But there is more bad news than good about all natural resources consumable by human persons on the earth and their regenerations of many potentially renewable resources. Although some renewable are being used in a manner that is supportive of their future availability, many are not. If this situation does not change for the better in the near future, there will be grim consequence for the human economy, and also for future generations, biodiversity and natural ecosystems. The erstwhile colonial powers having deficit of their own natural resources are mainly sustaining on the resources of the financially poorer countries those are generally rich in natural resources. The developing world exploited by the colonial powers for their rich natural resources. Financially poorer countries because of heavy international debt forced to over-exploit their rich natural resources to earn foreign exchange for servicing their debt. This process continued by developed world in different form of exploitation and the situation is worsening. Poverty and rapid population growth is other cause of over-exploitation of natural resources in developing world. Such poverty brought by the greed developed world and few third world elites. Technological innovations by developed worlds to developing worlds make farming profitable for foreigners either prompting the expansion of farms by clearing natural resources like forest or attract new farmers to forest frontiers. Rampant consumerism by the developed countries frequently has been claimed as a major reason for over-exploitation of natural resources in developing world. The opening of tropical countries to the world commodity markets accelerated the over-exploitation of natural resources of the developing world. And this is against intra-generational equity in economic system that seeks to redress the imbalance in wealth and economic development between the developed and developing worlds by giving priority to the needs of the poor mainly from developing world. Also it is against the principle of sustainable development that entails reorientation of the world's economic system by which the burdens of environmental protection will fall more heavily on the developed world's and the economic benefits will accrue more significantly to the underdeveloped south from the common benefit of all.

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