**Biodiversity- Nature’s Living Treasure for Sustainable Development**

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**Introduction**

The term biodiversity or biological diversity describes the biological capital held within an area. It refers particularly to the differences between living organisms at different level of biological organization - gene, individual species and ecosystems. Biodiversity is a vital asset in global and local economies. Biodiversity directly supports ma­jor economic activity and jobs in such diverse sectors as agricul­ture, fisheries, forestry, pharma­ceuticals, pulp and paper, cos­metics, horticulture, construction and biotechnology. Food productiondepends on biodiversity and the services pro­vided by ecosystems. The thou­sands of different crop varieties and animal breeds are founded in the rich genetic pool of species. Biodiversity is also the basis for soil fertility, pollination, pest con­trol and all aspects important for producing the world’s food. Clean and secure supplies of wateralso depend on biodiversi­ty. Ecosystems function as natural water infrastructure, costing less than technological solutions. For­ests protect water supplies, wet­lands regulate floods, and healthy soils increase water and nutrient availability for crops and help re­duce off-farm impacts. Biodiversity and ecosystem functioning provide goods and services essential for human health– including nutrients, clean air and water and regula­tion of pests and vector-based diseases. Biodiversity is essential for the regulation of the immune response. Biodiversity is the ba­sis of traditional medicine, and a large number of top-ranking global prescription drugs contain components derived from plant extracts. Biodiversity is the basis for sus­tainable livelihoods. Benefits of biodiversity are especially im­portant to poor and vulnerable groups. To many, the goods and services derived from biodiversity directly constitute social safety nets and can mean the difference between misery and well-being. Traditional knowledgeassoci­ated with biodiversity is also im­portant and has value not only to those who depend on it in their daily lives but to modern industry and agriculture as well. Biodiversity is the cornerstone of the work, belief systems and basic survival of many women. Biodiversity plays a major role in mitigating climate changeby contributing to long-term se­questration of carbon in a number of biomes. Biodiversity also un­derpins ecosystem resilience and plays a critical role as part of disaster risk reductionand peace-building strategies. For­ests, wetlands and mangroves play a critical role in reducing the impacts of extreme events such as droughts, floods and tsunamis. Biodiversity encompasses multiple values and is vital for the production of food and to conserve the ecological foundations needed to sustain people’s livelihood. Besides, sustainable development is the development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Despite these facts, biodiversity is being lost at a greatly acceler­ated rate, largely due to human activities.

**Defining Biodiversity**

Biodiversity is the variety of life forms we see around us. It encompasses the whole

range of mammals, birds, reptiles, amphibians, fish, insects and other invertebrates, plants, fungi and micro-organisms such as protists, bacteria and viruses. It includes the genetic and morphological variability within a species and the assemblages of plants, animals and micro- organisms which together form their ecosystems and natural habitats. Article 2 of the Biodiversity Convention defines biological diversity to mean: The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.’ To some, the term is aligned with the idea of conserving the unique flora and fauna of ecosystems under threat, which are considered as legacy to human society. To others, especially the poor, biodiversity refers to the assortment of living organisms serving as food, medicine, and shelter to both humans and other living organisms, and providing the ecosystem with the services and other uses that human society needs to survive and develop now and in the future. Those with the technology can transform biodiversity into big business! Biodiversity obviously has different meanings and values at various levels (local versus global), and among various stakeholders (policymakers versus local resource users versus the scientific community). On the eco-system dimension of biodiversity there is already a high degradation. In history there were many natural extinctions of species, but the current rates of extinction are estimated to be roughly 100- times higher than typical rates in the fossil record. There are estimations that the increase will be 1000- 10,000 times higher in the future. Quantifying loss of genetic diversity is difficult, but it is clear that the extinction of species and declines of population lead to a loss of genetic diversity.

**Defining Sustainable Development**

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Put in the new globalised order, sustainable development is the integration of economic, social and environmental development considered as the inter-dependent and mutually reinforcing pillars which operate at the local, national, regional and global levels. This sets out two fundamental principles of intergenerational and intragenerational equity. The principle of Intergenerational equity means needs to preserve natural resource for the benefit of future generations. The principle of Intragenerational equity means equitable use of natural resources which implies that use by one state must take into account of the needs of other states (Kulkarni *et al.*, 2012).

The concept of sustainable development, as defined in the 1987 Brundtland Report,

attempted to reconcile the ways in which economic activity is organized with the often-competing needs of reversing environmental degradation and promoting human rights and poverty alleviation (WCED 1987). Meeting the needs of people living in the present without compromising the ability of future generations to meet their own needs has proven a compelling and enduring idea. But moving from general principles of sustainability to concrete actions has always proven difficult. The core principles of sustainability – intra-generational and inter-generational justice – raise numerous and often difficult questions. We are not always sure of the consequences of human actions. Attempts to implement sustainability are often characterized by debate over how cautious to be in the face of uncertainty, along with conflicting views over what we should be protecting and how much to prioritize the long-term benefits of environmental protection and resource conservation relative to the immediate benefits of resource exploitation. Decisions about sustainability must either accommodate multiple viewpoints, values and interests or they must force some people to compromise. Too often – as the environmental justice movement has demonstrated – it is those who are already socially and economically marginalized who are forced to do the compromising (Agyeman and Evans, 2004). Despite these difficulties, the ideas of sustainability and sustainable development provide useful concepts for discussing the goals and outcomes of environmental and social interventions. Further, by speaking to how we should live in the world, sustainability and sustainable development become more than concepts or ideas. They become a sort of bridge connecting our thinking and planning about the future to actions and consequences embedded in material ecosystem and social processes. The materiality, or concreteness, of sustainability is always present as a potentially countervailing force to those who seek to promote their own narrow interests; constraining and shaping the possibilities available to people in a number of important ways Lockie, (2012).

First, sustainability demands learning. As global environmental change illustrates, the temporal and spatial dynamics of human-nature interactions are characterized by processes of discontinuous change, interactive effects and unanticipated consequences (Lockie, 2014). Maintaining a favourable environment for humans in the long-term can never be about maintaining steady-state ecosystems, communities or economies (Steffen *et al*. 2007). Nor can it be about continuing to plan on the basis of current knowledge and institutional arrangements for environmental governance. Today’s knowledge of Earth-system processes and other socio-ecological assemblages will necessarily be proven incomplete and outmoded as species and ecosystems – along with human communities and institutions – evolve in potentially unpredictable ways. In practice, this would be about re-designing our institutions to build in ongoing learning, as well as the ability to be flexible in light of new knowledge and understanding. The future must be planned but, even more so, it must be learned.

Second, sustainability demands deliberation; that is, reasoned and truthful communication and discussion about important issues open to all those potentially

affected by that issue. This is not simply a matter of peoples’ rights to participate in democratic decision-making. Nor, for that matter, is it simply a matter of capturing local or indigenous knowledge. As important as these are (Magnani 2012), deliberation as demanded by sustainability is also a matter of recognizing that the human environment is a shifting terrain of knowledge, values, interests, aspirations and coalitions. As environmental disputes, planning exercises, management regimes etc. play out, multiple stakeholders are brought into contact. The knowledge, values and aspirations that people bring to any environmental governance process or conflict are always potentially redefined through their interaction with others. Ideas and understandings can shift, new interest groups form, and points of agreement and conflict change. Participatory deliberation is thus fundamental to understanding and responding to the dynamic ways in which social networks, understandings and priorities are constructed and re-constructed through processes of social-ecological change (Lockie, 2007).

Third, sustainability demands accountability. It is not enough to implement new programs of action. Our planning and learning towards the future must be evaluated. We must distinguish – both in prospect and retrospect – between appropriate and inappropriate, successful and unsuccessful, good and bad, attempts to assemble future social-ecologies. Numerous institutional arrangements have been implemented throughout human history to impose such accountability (for example, property rights and responsibilities, pollution licensing, production standards etc.). Sustainability demands that critical scrutiny, through learning and deliberation, of these arrangements be extended and intensified (Dryzek and Stevenson, 2011). In particular, it demands that scrutiny be focused on the distributive impacts of socio-ecological interventions across both space (intra-generational accountability) and time (intergenerational accountability).

**Integrating Biodiversity and Sustainability**

Biodiversity is the variability among all organisms in a particular ecological structure such as a habitat, community, landscape, or ecosystem. This includes the number of species as well as the diversity within a species, e.g., genetic variation or differences among populations. Scale matters when considering biodiversity. For example, one can consider the diversity at a specific site (alpha diversity), the differences in species composition among sites (beta diversity), or the diversity of the entire landscape, i.e., the regional species pool and can account for the turnover of species from site to site (gamma diversity). Much of the early research on biodiversity was in the area of taxonomy which is the discovery, cataloguing, classification, and naming of organisms; and systematics which is the determination of evolutionary relationships of organisms. The field of systematics has a seen rapid expansion with the development of molecular genetic techniques.

The field of ecology has been very much focused on the distribution and abundance of species as determined by both abiotic and biotic factors including those associated with biogeography (Petraitis *et al*., 1984, Hubbell *et al*., 2001). With the advancement of the field of Conservation Biology much work has be done on documenting both the rates and the causes of extinction, the influence of habitat fragmentation and alien species on diversity, and on the decline of genetic diversity within species and its consequences. Also, there has been much work on the optimal design of conservation areas for the maintenance of high levels of diversity. This has included the use of ecological corridors or greenways to link conservation areas (Kati *et al*, 2004). As conservation began to be integrated with sustainability, research agendas focused on maintaining diversity in connection with the economic and social components of sustainability began to emerge. One early area of focus was the development sustainable forestry with the goal to provide equitable income while maintaining biodiversity by eliminating monocultures and implementing techniques such as age-specific harvest, the polycyclic felling system; and the sustainable harvest of non-timber forest products. Rather than displacing people, these models offer local stakeholders’ economic opportunities through community-based sustainable forestry. Also, an understanding of biocultural conservation that emphasizes the conservation of culture and heritage as an essential aspect of habitat and species conservation emerged (Gavin *et al.*, 2015). This approach to conservation recognizes those indigenous cultures typically already value biodiversity, and that they can serve as allies in its protection if their heritage and culture including folklore, language, and indigenous knowledge are also protected. Research in these areas led to the development of conservation projects that consider the habitat and its biodiversity as well as meeting the social and economic needs of human communities that live in or near these areas.

Sustainable development, according to the Brundtland Report of 1987, is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Put in the new globalised order, sustainable development is the integration of economic, social and environmental development considered as the inter-dependent and mutually reinforcing pillars which operate at the local, national, regional and global levels. Poverty eradication the change in unsustainable patterns of production and consumption and the protection and management of natural resources base of economic and social development are constantly cited as the over-arching objectives and essential requirements for sustainable development. Certain issues confronting biodiversity with respect to sustainable development are discussed as hereunder:

* There is a division of the human society into the rich and the poor, and there is an ever-increasing gap between the developed and the developing worlds.
* The global environment is presently under stress because:
* There are high population growth rates acting in concert with other human induced factors as underlying causes for habitat degradation and destruction.
* There is continuing loss of biodiversity at rates much higher than can be replenished.
* With the use of modern harvesting and other new technologies essential biodiversity stocks continue to be depleted.
* As a result of our own actions and inactions, desertification has claimed more and more fertile lands.
* Adverse effects of climate change are being witnessed every day.
* Natural disasters have become more frequent and more devastating.
* Several developing countries have become more vulnerable to economic hardships and have several compelling reasons to mortgage their natural resources for debt relief, and
* Air, water and marine environments continue to be polluted through our industrial activities.
* The benefits and costs of globalization are unevenly distributed, and these have presented a new set of difficulties to developing countries to meet the globalization challenge.

Biodiversity, literally, is the foundation upon which human civilization has been built. In addition to its intrinsic value, biodiversity provides goods and services that underpin sustainable development in many important ways, thus contributing to poverty alleviation. First it supports the ecosystem functions essential for life on Earth, such as the provision of fresh water, soil conservation, and climate stability. Second, it provides products such as food, medicines and materials for industry. Finally, biodiversity is at the heart of many cultural values. In total, biodiversity is life insurance for sustainable development.

In the sustainability framework discussed earlier, biodiversity is a key feature or element of the natural resource base which, when it interacts with the technology and socio-economic dimensions, determines the pathway of development. If the existing technological, socioeconomic and institutional processes erode biodiversity and its functional elements as a component of the natural resource base, the resulting development process will not be sustainable in the long run. However, if biodiversity is well-managed such that its structure and functional relations are kept intact, then a more sustainable pathway for economic development could likely be attained. If nothing is done to reverse these global trends, the disparities will become entrenched, and sustainable development as a final goal for the global order will not be achieved.

**Biodiversity Challenges and Sustainable Development**

In the message to the 2002 World Summit on Sustainable Development (WSSD) in

Johannesburg, South Africa, the UN Secretary General introduced the WEHAB initiative which recognized water, energy, health, agriculture and biodiversity as the basic necessity for life. Sustainable development will result from the interactions of three major and interacting elements: (a) technology; (b) natural resource base; and (c) socioeconomic elements. To attain sustainable development, these three major elements must work in a symbiotic and complementary manner so that the goods and services generated by the interactions of technology and the resource base which are needed by human society are produced sustainably. Technologies that must be developed or used to utilize the natural resource base must not only be economically viable but also be environmentally-friendly.

In April 2002 the 6th Conference of the Parties (COP) to the Convention on Biological Diversity holding in the Hague, the Netherlands, taking note of its existence for the past 10 years, noting that the rate of loss of biodiversity was still accelerating, and considering ways to address the threats to biodiversity, adopted a strategic plan, the purpose of which was to effectively halt the loss of biodiversity so as to secure the continuity of its beneficial uses through the conservation and sustainable use of its components and the fair and equitable sharing of benefits arising from the use of genetic resources. The CBD COP6 decision VI/26 committed Parties to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth. In a related event the ministerial segment of COP6 also made a declaration – the ministerial declaration – to strengthen efforts to put in place measures to halt biodiversity loss which is taking place at an alarming rate, at the global, regional, subregional and national levels by the year 2010. The ministerial declaration further called on the World Summit on Sustainable Development which was forth coming then to confirm the commitment to have instruments in place to stop and reverse the current alarming biodiversity loss at the global, regional, sub-regional and national levels by the year 2010.

Thus, with the adoption of the Johannesburg plan of implementation of the WSSD, the summit reconfirmed the role of the Convention as the key instrument for the conservation and sustainable use of biological diversity and the fair and equitable sharing of benefits arising from its use. The summit also recognized the critical role played by biodiversity in overall sustainable development and poverty eradication and also recognized that the achievement by 2010 of a significant reduction in the current rate of loss of biological diversity will require the provision of new and additional financial and technical resources. Thus, when in May 2003 the Secretariat of the Convention on Biological Diversity, the UNEP World Conservation Monitoring Centre (WCMC) and the United Nations Development Programme jointly convened a meeting in London to review the 2010 target, the Global Biodiversity challenge of 2010 had gathered momentum and the meeting was therefore strategized to provide a better understanding of the 2010 target and how its achievement or otherwise could be assessed.

**Biodiversity Organizations in response to the challenges**

There are so many International as well as national legislations relating to conservation and sustainable use of the natural resources. The Convention on Biological Diversity\(CBD) is a landmark in the environment and development field, as it takes for the first time a comprehensive rather than a sectoral approach to the conservation of Earth's biodiversity and sustainable use of biological resources. It was in the year 1984 that the need to have in place a global convention on biological diversity started gaining momentum. In response, the United Nations Environment Programme (UNEP) in the year 1987 recognised the need to streamline international efforts to protect biodiversity. The Convention on Biological Diversity (CBD) was negotiated and signed by nations at the UNCED Earth Summit at Rio de Janeiro in Brazil in June 1992. The Convention came into force on December 29,1993. India became a Party to the Convention in 1994. At present, there are 175 Parties to this Convention. The CBD acknowledges sustainable resource management as a basic means of addressing conservation and economic issues, within the context of the full spectrum of biological resources: fisheries, forests, agriculture, wild plants and animals as well as the genetic material derived from them.

The main objectives of the Convention are:

* Conservation of biological diversity.
* Sustainable use of the components of biodiversity.
* Fair and equitable sharing of benefits arising out of the utilisation of genetic resources.

Ten years have passed since the CBD entered into force. Ten years of intense negotiations and hard work by Parties, Secretariat and civil society have translated

the text of the CBD into more concrete and ‘workable’ instruments such as work programmes and the Cartagena Protocol. Nevertheless, biodiversity, the very basis of life, is today still being lost at high speed and the implementation of the CBD remains difficult. The broad scope and overarching nature of the CBD as well as limited political support for its implementation, make existing instruments neither enough known nor used. The Convention on Biological Diversity, being the key international instrument on biodiversity, has developed a strategy of 4 – goals and objectives to commit states Parties to the 2010 target to ensure the effective and coherent implementation of the three objectives of the Convention. The four goals are that:

* The Convention is fulfilling its leadership role in international biodiversity issues.
* Parties have improved financial, human, scientific, technical and technological capacity to implement the convention.
* National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the convention.
* There is a better understanding of the importance of biodiversity and of the Convention, and this has led to a broader engagement across society in implementation. Each of these goals has a set of actions which parties are to embark upon to achieve at the local and national levels to reflect at the regional and international levels.

In the commitment, Parties are expected to embrace fully the multi-year programme of work of the conference of the Parties until 2010 which include ongoing programmes of work on both thematic areas and cross-cutting issues and implement these on the basis of national strategies and action plans and other national, regional and international activities. The thematic areas are Dry and sub-humid lands biodiversity, Agricultural biodiversity, Forest biodiversity, Inland waters biodiversity, Marine and coastal biodiversity, and Mountain biodiversity. The Island biodiversity is a new thematic area that is being earmarked for in-depth consideration in the near future. The crosscutting issues include Access and benefit sharing (ABS), Communication, education and public awareness (CEPA), Article 8(j) and related provisions, Incentives, Invasive Alien Species, Climate change, protected areas Global taxonomy initiative (GTI), Global Strategy for Plant Conservation (GSPC), Tourism and Sustainable use. The Ecosystem approach, is the framework to implement the convention. It has been agreed among parties that the strategy to evaluate progress and implementation support of the 2010 target should involve two issues, namely:

* Progress in the implementation of the strategic plan and follow-up actions involving the global targets and related measures such as monitoring and indicators and trends of biodiversity, and
* Refinement of the mechanisms to support the implementation such as financial mechanism, clearing-house mechanism, technology transfer, capacity building etc.

Many of these thematic and cross-cutting programmes of work referred to above are also handled by other multi-lateral organizations, agreements and initiatives, which sometimes even go to greater depths to treat the items because of their mandates. The co-operation of all of these organizations is needed, and this calls for partnerships for various joint activities as in synergy promotion.

**Value of Biodiversity in terms of Sustainable development**

Very rightly by the former Secretary General of United Nations Organization, Kofi Annan said that "Failure to conserve and use biological diversity in a sustainable manner would result in degrading environments, new and more rampant illnesses, deepening poverty and a continued pattern of inequitable and untenable growth."

Biodiversity, literally, is the foundation upon which human civilization has been built. In addition to its intrinsic value, biodiversity provides goods and services that underpin sustainable development in many important ways, thus contributing to poverty alleviation. First it supports the ecosystem functions essential for life on Earth, such as the provision of fresh water, soil conservation, and climate stability. Second, it provides products such as food, medicines and materials for industry. Finally, biodiversity is at the heart of many cultural values. In total, biodiversity is life insurance for sustainable development.

**Biodiversity Loss**

Habitat destruction, overexploitation, pollution and invasive species introduction are the major causes of biodiversity loss in India. Other factors included fires, which adversely affect regeneration in some cases, and such natural calamities as droughts, diseases, cyclones, landslides and floods. Major threats to Biodiversity while non recognition of the importance of biodiversity remains the principal and overriding threat to conservation initiatives, the following are agreed to be the major threats to biodiversity:

* High rate of human population growth and unsustainable natural resources consumption.
* Uncontrolled commercial exploitation of natural resources, Habitat destruction, including destruction of forests, reclamation of wetlands etc.
* Global climate change.
* Economic system and policies that fails to value the environment and its resources.
* Lack of knowledge about biodiversity conservation and its application in human well-being.
* Lack of legal and institutional systems that promote unsustainable exploitations.
* Deforestation and degradation of forest area.
* Degree of specialization of a species and its morphological features.
* Position of organism in the food chain.
* Unrestricted use of pesticides, insecticides and chemicals.
* Adhoc extension of high input agriculture.
* Conversion of rich biodiversity sites for human settlement and industrial development.

**Conservation of Biodiversity**

Conservation means the management of men's use of the biodiversity in such a way that maximum benefit accrues from it to the present generation while maintaining its potential to meet the requirements of the future generations. Efforts to conserve biodiversity must focus on sustainable development. The goal of biodiversity conservation is not simply to protect and maintain the existing biological resources but to utilize them for human welfare in such a way that the use does not diminish the world's variety of genes and species or important habitats and ecosystem. Thus three basic elements are involved in conservation saving biodiversity, study and understand its structure and function and use it sustainably. The methods of conservation of biodiversity can be broadly classified as in situ conservation and ex

situ conservation (Goel and Mitra, 2000).

* In situ conservation: In situ conservation is the most appropriate method to maintain species of wild plants and animals in their natural habitats. This approach includes protection of total ecosystem through a network of protected areas. The common protected areas that have been set for in situ conservation of wild plants and animals include- National Parks, Wildlife Sanctuaries, Biosphere Reserves and Wetlands.
* Ex situ conservation: In the face of increasing human interference, in situ conservation is not a viable option for most of the rare species. In the natural habitats, species may decline and/or become extinct due to several factors such as genetic drift and inbreeding deterioration of habitat quality and /or habitat loss, demographic and environmental variations, competition from exotic species, diseases as well as over exploitation. Under such circumstances, ulcerative method of conservation of species is ex situ conservation. Here individuals of species are maintained in artificial conditions under human supervision. In other words, Ex situ conservation involves cultivation of rare plants and rearing of threatened animal species in Botanical and Zoological gardens respectively and preserve the former in the form of seeds in seed banks etc by means of tissue culture techniques. These methods also include maintaining gene banks and pollen of species. In-vitro conservation especially cryo-preservation is useful technique for preserving vegetatively propagated crops e.g. seeds of plants and preserving sperms, eggs, cells and embryonic tissues of animals at 196 ºC temperature.

**Principles for conserving Biodiversity**

Dubey *et al* (2007) described the following principles which are very useful for conservation of biodiversity:

* Every form of life is unique and warrants respect from humanity. Every life form have right to live in their habitat.
* Biodiversity conservation is an investment that yields substantial local, national and global benefits in terms of medicines, genetic resources etc.
* As part of larger effort to achieve sustainable development, biodiversity conservation requires fundamental changes in patterns and practices of economic, social and cultural development.
* Increased funding for biodiversity conservation will not by itself slow biodiversity loss. Policy and institutional reforms, people’s participation networking of efforts are needed to create the conditions under which increased funding can percolate to the desired locations.
* Biodiversity conservation can be sustained only if people's involvement, awareness and concern are substantially heightened and addressed.
* Priorities for biodiversity conservation differ when viewed from local, national and global perspectives; all are legitimate and should be taken in to account. All communities have vested interest and old tradition in conserving their biodiversity. The focus should not be exclusively on a few species’ rich ecosystems or areas. It should be logical and realistic with broader vision.
* Action to conserve biodiversity must be planned and implemented at a scale

determined ecological and social criteria. The focus of activity must be in the vicinity where people live and work as well as in wild land areas.

* Cultural diversity is closely linked to biodiversity. Humanity's collective knowledge of biodiversity and its use and management rests in cultural diversity; conversely conserving biodiversity often helps strengthen cultural integrity and value.
* Respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional life styles relevant for conservation and sustainable use of biodiversity and promote their wider application.
* Caring biodiversity before introducing any technological development. Protocol to care for this should be a part of new initiatives.
* Identification of keystone species, edge species, flagship species and looking into causes of their threat and measures to check it.

**Conserving biodiversity for sustainable development**

Biodiversity conservation is unlike any other sustainable development issue because loss of biodiversity is irreversible. Extinction is final and there is no second chance. Earth’s resources are finite and there are ecological limits to growth which, unless we alter our ways, will sooner rather than later be exhausted. Although the question may seem like heresy to an ecologist, we cannot take it for granted that all sectors of society see value in biodiversity. Quite the contrary, humans often deliberately reduce biodiversity to achieve their goals. In many parts of the globe fields of richly varied plant types have been replaced by vast uniform fields of maize, wheat, and other valued crops. Some of these commercial monocultures are even monoclonal, the ultimate in low diversity. Programs of pest control, both agricultural and residential, strive to eliminate unwanted creatures with no concern for the resulting impact on biodiversity. Although it is difficult to exterminate “pests” in the sea, it has certainly been tried – many countries have sought to cull seals and other marine predators that compete with man. It is useful and indeed necessary to remind ourselves that a healthy human environment depends entirely on biodiversity.

Everything we eat, wear and produce on this planet Earth is ultimately dependent on its biodiversity. Indeed, there is little awareness in most urbanized societies that the food on the table is a product stemming from biological diversity. This lack of awareness compounds the problem that ever-increasing demands on the world’s resources to satisfy the needs of modern life are leading to overuse of biological diversity. Arguably, then, the greatest challenge facing humanity is to either curb unrealistic expectations and bring over-used resources back to sustainable limits, or find alternatives for these resources. Failure to conserve and use biological diversity in a sustainable manner would result in degrading environments, new and more rampant illnesses, deepening poverty and a continued pattern of inequitable and untenable growth. Humans, however, seem to have forgotten the importance of biodiversity, and continued to exploit other life forms for their selfish gains. Increasing population has resulted in rapid growth in consumption of resources, which has in turn resulted in loss on biodiversity on the planet. Over the last few decades, biodiversity importance has become one of the top priority environmental issues for the United Nations, and this very fact has pushed them to come up with measures like the 'International Year of Biodiversity' in order to save the environment.

**Conclusions**

Biodiversity ultimately provides us with a source of food, medicines, materials and

opportunities. The earth’s biological resources are vital to humanity’s economic and social development. As a result, there is a growing recognition that biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never been as great as it is today. Species extinction caused by human activities continues at an alarming rate reduction of the earth’s biodiversity as a result of human activities is a matter of great concern. Human activities motivated by the attitude of rampant consumerism and unsustainable patterns of production and consumption have never been so inhumane and callous towards environment as in the modern era of scientific and technological innovations. Man’s greed attacks nature environment and ecology and wounded nature backlashes on the human future. We are in the midst of the sixth era of extinction. This problem can be solved only by proper guidance, awareness, education, transfer of advance technology, research, conservation and sustainable use of biological diversity. It is clear that the preservation of biodiversity is important if not essential in allowing humans to sustain their lives in a variety of ways. At the same time biodiversity conservation and human activity and development are often seen in conflict with each other. This conflict can be alleviated through the integration of biodiversity conservation with the three-pillar model of sustainability and sustainable development.

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