LOSS OF BIODIVERSITY

An Introduction

Biodiversity which is often used as a measure of the health of biological systems, represents the array of population and species of other organisms with which homo sapiens shares Earth and the communities, ecosystems, and landscapes of which they're component part.

Biologists most often define "Biological diversity" or "Biodiversity" as the totality of genes, species' and ecosystems of a region." The definition reflects the need to consider biodiversity at all three levels namely Genetic Diversity, Species, and Ecosystem diversity

This multilevel conception is consistent with the early use of "Biological diversity" in Washington D.C. and international conservation organization in the late 1960's by Raymond F. Dasmann who apparently coined the term\(^1\) and Thomas. E. Lovejoy who later introduced it to the wider conservation and science communities through the foreword of a book.\(^2\) An explicit definition consistent with this interpretation was first given in a paper by Bruce A. Wilcox commissioned by the International Union for the Conservation of Nature "Biological diversity is the variety of life forms at all levels of biological systems (i.e., molecular, organismic, populations species and ecosystem) "\(^3\)

Subsequently, the 1992 United Nations Earth Summit in Rio de Janeiro defined "biological diversity" as "the variability among living organisms from all sources,

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including, interalia, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they're part - this includes diversity within species, between species and of ecosystems". It is the definition adopted by UN Convention on Biological diversity.4

To have a better understanding of the causes and consequences of extinction of species, few basic concepts such as ecosystem, species, subspecies, genetic diversity etc. are needed to be explained.

**Ecosystem**

Ecosystems are dynamic complexes of plants, animal and microorganisms communities and their non-living environment, interacting as an ecological unit. Ecosystems vary place to place, and their diversity can be evaluated provided that they're described using a consistent set of criteria. Not all ecosystems and habitats are equally diverse. Deserts tend to have relatively low diversity while tropical forest have by far the highest numbers of species. Coral reefs may have for higher taxonomic diversity, because they support a wider range of animal groups.

Tropical forests support well over half the planet's species on only about six percent of its land area. After Amazonia, the second largest block of rain forest in the world is the Indo-Malayan realm. The rapid conversion of these forests has particularly serious implications for biological diversity.

While wetlands are not noted for high species diversity or endemism, they’re very complex and highly productive, ecosystems and the effects of their loss are felt widely through disruptions of the hydrological cycle, destruction of habitats for migratory birds and reduction of the productivity of fisheries. The degradation of coral reefs in many part of the tropics has implications for biodiversity because as noted above, they're probably the most diverse of all marine habitats.

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4 [https://www.cbd.int/](https://www.cbd.int/)
Species

A very considerable body of work in the field of conservation biology over the past several decades has shown that reducing the area of habitat reduces not only the population of each species, but also the number of species, the habitat can hold. As a broad general rule, reducing the size of a habitat by ninety percent will reduce the number of species that can be supported in the long run by about 50 percent.

Many ecologists believe that this relationship also holds true when formerly large areas of continuous habitat are fragmented into smaller habitat 'Islands' separated by land that support other kinds of ecosystems. Even relatively large National Parks are expected to suffer over a period of years from this kind of isolation with the degree of species loss dependent on the initial number of species as well as on the size of the protected area.

Because habitats are being reduced in all parts of the world, the populations of many species are being dramatically reduced and this increase the rate of extinction.

Many species that are not in immediate danger of extinction are suffering from declining populations and declining genetic variability while some wild animal species - sparrows, pigeons, crows, starlings, opossums, rates, hedgehogs, raccoons, foxes, coyotes, several deer, and other opportunists- are expanding their ranges and populations, far more are suffering population declines. Low populations make species more vulnerable to inbreeding, disease, habitat alteration and environmental stress.

Significance

Conserving biodiversity is important for reasons of both principle and human self-interest. The world charter for nature, adopted by the UN General Assembly in 1984, states that all species regard respect regardless of their usefulness to humanity. Human self-interest is involved because ecosystems function as the planetary life support system, renewing atmosphere oxygen and playing a cultural part in the biochemical cycle. They're a source of food, fiber, timber, natural drugs and other products, they conserve soil, and they shelter genetic strains to which crop breeds continually in order to improve cultivated verities.\(^5\)

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\(^5\) ibid.
A material analysis of the significance of invaluable gift of nature that is biodiversity would go better to the modern day man who entertains every issue with a cost-benefit approach.

**Agriculture**

Today, it is a well-recognized fact that biodiversity is a sin quo non for sustainable agriculture. The economic value of the genetic traits present wild varieties and traditionally grown landraces if extremely important in improving crop performance. Crop diversity also helps the system recover when the dominant crop type is attacked by a disease. Monoculture, the lack of biodiversity, was a contributing factor to several agricultural disasters in history including the Irish potato famine, the European wine Industry collapse in the late 1800s and the US southern corn leaf blight epidemic of 1970.6

Besides these, biological diversity plays a very crucial role in agricultural development in other innumerable ways.7

i) Biodiversity Controls pest,

ii) Biodiversity Controls termites,

iii) Biodiversity Controls nematodes,

iv) Biodiversity Controls weeds,

v) Biodiversity to increase the fertility of soil

In addition, the products obtained from biodiversity are ecologically safer and economically cheaper also. The name of certain such products of biodiversity are as follows -

1. Biopesticides

2. Bio control of pests

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7 Kumar, Arvind, Biodiversity and Environment. APH, publishing Co.2004, pp-149-153
3. Bio fertilizers
4. Vermicompost from earthworm species

**Human Health,**

The relevance of biodiversity to human health is becoming a major international political issue, as scientific evidence builds on the global health implications of biodiversity loss. This issue is closely linked with the issue of climate change, as many of the anticipated health risks of climate change are associated with changes in biodiversity (e.g. changes in populations and distribution of disease vectors, scarcity of fresh water, impacts on agricultural biodiversity and food resources etc.). Some of the health issues influenced by biodiversity include dietary health and nutrition security, infectious diseases, medical science and medicinal resources, social and psychological health, and spiritual well being. Biodiversity is also known to have an important role in reducing disaster risk, and in post-disaster relief and recovery efforts.\(^8\)

One of the key health issue associated with biodiversity is that of drug discovery and the availability of medicinal resources. A significant proportion of drugs are derived, directly or indirectly, from biological sources. Through the field of bionics, considerable technological advancement has occurred which would not have without a rich biodiversity.

It has been argued, based on evidence from market analysis and biodiversity science, that the decline in output from the pharmaceutical sector since the mid-1980s can be attributed to a move away from natural product exploration (bio-prospecting) in favour of R&D programmes based on genomics and synthetic chemistry, neither of which have yielded the expected the product outputs.\(^9\)

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\(^8\) COHAB Initiative : Biodiversity and Human Health the issues". Cohabnet.org. http://www.cohabnet.org
**Business**

A wide range of industrial materials are derived directly from biological resources. These include building materials, fibers, dyes, and oil. There is enormous potential for further research into sustainably utilizing materials from a wider diversity of organisms. In addition, biodiversity and the ecosystem goods and service it provides are considered to be fundamental to healthy economic systems. The degree to which biodiversity supports business varies between regions and between economic sectors, however the importance of biodiversity to issues of resource security (water quantity and quality, timber, paper and fiber, food and medicinal resources etc.) are increasingly recognized as universal\(^\text{10}\). As a result the loss of biodiversity is increasingly recognized as a significant risk factor in business development and a threat to long term economic sustainability.

**Others**

Biodiversity provides many ecosystem services that are often not readily visible. It plays a part in regulating the chemistry of our atmosphere and water supply. Biodiversity is directly involved in water purification, recycling nutrients and providing fertile soils. Experiments with controlled environments have shown that humans cannot easily build ecosystems to support human needs, for example insect pollination cannot be mimicked by human made construction and that activity alone represents tens of billions of dollars in ecosystem services per annum to human kind.

The stability of ecosystems is also related to biodiversity, with higher biodiversity producing greater stability over time, reducing the chance that ecosystems services will be disrupted as a result of disturbances such as extreme weather counts or human explanation.

In addition, many people device value from bio-diversity through leisure activities such as hiking, bird watching etc. Biodiversity has inspired musicians, painters, sculptors, writers and other artists. Many cultural groups view themselves as an integral part of the

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\(^{10}\) IUCN, WRI, WBCSD, Earth watch Inst. 2007 Business and Ecosystems : Ecosystem challenges and business implications

Loss of Biodiversity 69
natural world and show respect for other living organisms.

Above all, in the nature's scheme of things, all species play complementary and supplementary role for the survival of all living entities. One life supports the other, which is an unalterable law of nature, thus all species have dual role, (a) every species survives on other species and (b) every species adds to the food basket of other species as well. In this sense, all species on this planet could be deduced as 'food basket', planet earth is unique in many ways, which is the only one sheltering innumerable species to coexist though, at the same time each of them is feeding or nourishing one- another. Without these diverse varieties putting up together, a few sacrificing in favour of several others, living would have come to a naught. It is for man's smooth existence that he should strive for the maintenance of bio-diversity order.\textsuperscript{11}

Loss of Biodiversity

Thus for millions of years humans depended on biological materials- plants, animals and micro-organisms - for food, medicines and utter disregards to this fact, over the years, to this fact, over the years, particularly during the last few decades, this important capita stock on which human life depends, has been subjected to irreplaceable loss. Ironically these losses occurred, unnoticed and unappreciated by the very development and progress that societies achieved.

Many species have been lost naturally over time - perhaps 99 percent of all the species that ever lived - but human activity is now killing them much faster than at any time in human history.\textsuperscript{12} Some studies show that about one- eighth of known plant species are threatened with extinction.\textsuperscript{13} Some estimates put the loss at up to 1,40,000 species per year (based on species area theory)\textsuperscript{14} The factors that threaten biodiversity are manifold. They have been variously categorized. Jared Diamond describes an "Evil quartet" of

\textsuperscript{11} Kusukshetra, Biodiversity conservation should be the Mantra of the century December 2006, voll. 55, pp. 3.4
\textsuperscript{12} "Reid, Revising loss of Biodiversity", Ag.avizonaedu. http://ag.orizona.edu
\textsuperscript{13} Ibid
habitat destruction, Over kill; introduced species and secondary extensions. Edward O Wilson prefers the acronym HIPPO, standing for habitat destruction, Invasive species, pollution, human over population, and over harvesting. The major agencies of human impact on plant and animal species according to Roberts Peters and Thomas Lovejoy which they term "four horsemen of development" are habitat destruction, harvesting, introduced species and pollution.

Kumar and Asija have enlisted the major causes of biodiversity losses in which they have divided the major losses in which they have divided the major causes into 7 categories.

1) **Development Pressure** - Such as (a) construction (b) forest based categories (c) mining (d) oil drilling (e) pollution (f) resource extraction.

2) **Encroachment** - (a) agriculture (b) expansion of forest villages (c) fisheries (d) grazing/increased domestic animals (e) habitat depletion (f) horticulture (g) monoculture forestry (h) new settlements

3) **Human Induced disasters** - (a) floods (b) oil spills (c) wildlife degradation (d) epidemic (e) forest fires due to humming (f) forest fires

4) **Exploitation** - (a) collection made by scientific/educational institutions (b) exploitation

Some of the socio us threats to biodiversity may be discussed as below -

**Habitat Destruction**

Most of the species extinction from 1000 AD to 2000 AD are due to human activities, in particular destruction of plant and animal habitats raised rates of extinction are being driven by human consumption of extinction are being driven by human consumption of

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17 Ibid.
18 Kumar V., and Asija, Mahendra,Jeet (2000), Biodiversity, Principles and conservation, Agrotios (India), Jodhpur-342002.
organic resources, specially related to tropical forest destruction. While most of the species that are extinction are not food species, their biomass is converted into human food when their habitat is transformed into pasture, cropland, and orchards because an ecosystem is destined for collapse if it is further reduced in complexity factors contributing to loss of habitat are - overpopulation, deforestation, pollution (air, water & soil contamination) and global warming or climate change, driven by human activity. These factors, while all stemming from overpopulation, produce a cumulative impact upon biodiversity by local authorities activities(a) firewood (b) food gathering (c) food hunting (d) poaching (e) smuggling of timber f) unregulated trade etc..

5) **Management of Human resources** - (a) change in people life style (b) conflicting (c) dilution of traditional value (d) Erosion of indigenous knowledge (e) generation gap (f) human harassment (g) ignorance (h) lack of effective management (i) negative attitude (j) inappropriate land use.

6) **Management of Natural Resources** - (a) Appeases (b) fire as management tool (c) Genetic uniformity (d) Hybridization (e) increased competition (f) introduction (g) lack of patronage of native species (h) lack at pollination (i) tow population/restricted range (j) predation.

7) **Political and policy issues** - (a) change in legal status (b) civil unrest (c) insurgency (d) intercommunity conflict (e) intervention failure (f) lack of clear policy implementation (g) lack of interdepartmental coordination (h) lack of intervention (i) political pressure (g) military activities.

There’re systematic relationships between the area of a habitat and the number of species it can support, with greater sensitivity to reduction in habitat area for species of larger body size and for those living at lower latitudes or in forests or oceans. Some characterize loss of biodiversity not as ecosystem degradation but by conversion to trivial standardized ecosystems (e.g. monoculture following deforestation).

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20 Arakare S. Lennon J.L., Hillebrand H. 2006 The imprint of the geographical, evolutionary and ecological context on species area relationship
At present, the most threatened ecosystems are those found in fresh water. The marking fresh water ecosystem most under threat was done by the millennium ecosystem assessment 2005 and was confirmed again by the project "fresh water animal diversity assessment".  

Introduced species

Rich diversity of unique species across many parts of the world exist only because they're separated by barriers from other species of other land masses, particularly the highly fecund ultra - competitive, generalist "Super species" Human have invented transportation with the ability to bring into contact species that they've never met in their evolutionary history also, this is done on a time scale of days, unlike the centuries that historically have accompanied major animal migrations.

That widespread introduction of exotic species by humans is a potent threat to biodiversity. When exotic species are introduced to ecosystems and establish self-sustaining populations, the endemic species in that ecosystem that have not evolved to cope with the exotic species may not survive. The invasive species can affect native species directly by eating them, competing with than, and introducing pathogens or parasites that sicken or degrading their habitat. Thus, if humans continue to combine species from different eco-regions, there is the potential that the world's ecosystems will end up dominated by relatively a few, aggressive, cosmopolitan "super-species".

Hybridization and genetics

Purebred naturally evolved region specific wild species can be threatened with extinction through the process of genetic pollution i.e. uncontrolled hybridization, introgression and genetic swamping which leads to homogenization or replacement of local genotypes as a result of either a numerical and/or fitness advantage of introduced species. In agriculture and animal husbandry, the green revolution popularized the use of conventional hybridization to increase yield by creating "high yielding varieties"
Governments and industry have been pushing hybridization which has resulted in several of the indigenous breeds becoming extinct or threatened.

Genetically modified crops today have become a common source for genetic pollution not only of wild varieties but also of other domesticated varieties derived from relatively natural hybridization.

**Co-extinction**

Co-extinction refers to the loss of a species due to the extinction of another, for example, the extinction of parasitic insects following the loss of their hosts, "species co-extinction is a manifestation of the interconnectedness of organisms in complex ecosystems ... while co-extinction may not be the most important cause of species extinction, it is certainly an insidious one". ²³

**Global Warming**

There's also discussion about the term affects of global warming on the extinction process. Currently studies have conclude that global warming may drive one quarter of all land animals and plants to extinction by 2050.²⁴ The ecologically rich hotspots where potentially most damage would be done include places like South Africa cape floristic region, and the Caribbean Basin. These areas include a doubling of present carbon dioxide levels and rising temperatures that could eliminate 56,000 plant and 3,700 animal species in these hot spot regions²⁵.

**Impact of Biodiversity loss**

Biodiversity is essential for the benefits the ecosystem can provide to humans and hence for human well being. Its role goes beyond ensuring the availability raw materials to include security resiliency, social relations, health, and freedoms and choices. While many people have benefited over the last century from the conversion of natural

²³ Koh, tiahpih, Science, vol 305, issue 5690, 1932-1634 10 September, 2004
²⁴ White possum said to be the first victim of global warming.
ecosystems to human dominated ecosystem other people have suffered from consequences of biodiversity losses. Besides, influencing human beings directly, biodiversity loss has also an indirect impact on human well-being through its catastrophic ecological consequences. Thus, the impact of biodiversity loss may be studied under two heads -

a. socio-economic impact Ecological Consequences

b. Socio-economic Consequences.

**Ecological Impact of Biodiversity Loss**

The loss of a species can have various effect on the remaining species in an ecosystem what kind an how many depends upon the characteristics of the ecosystem and upon in species role in its structure. Cascade effects occur when the local extinction of one species significantly changes the population sizes of other species, potentially leading to other extirpations such cascade effects are particularly likely when the lost species is a "keystone predator", a "Keystone mutualist" or the prey of a "specialist predator".

**Socio-economic impact of biodiversity loss**

1. **Food Security** -

Biodiversity is important to maintain agricultural production - wild relations of domestic crops provide genetic variability that can be crucial for overcoming outbreaks of pests and pathogens and new environmental stresses. Many agricultural communities consider, increased local diversity a critical factor for the long term production and viability of their agricultural systems. For example, interweaving multiple varieties of rice in the same paddy has been shown to increase productivity by lowering the loss from pests & pathogens.

2. **Vulnerability** -

Many communities have experienced more natural disasters over the past several decades. For example, because of the loss of mangroves and coral reefs, which're
excellent natural buffers against, bloods and storms, coastal communities have increasingly suffered from severe floods.

3. **Health** -

A balanced diet depends on the availability of a wide variety of foods, which in turn depends on the conservation of biodiversity - moreover, greater wildlife diversity may increase the spread of many wildlife pathogens to humans.

4. **Energy security** -

Wood fuel provides more than half the energy used in development countries. Shortage of wood fuel occurs in areas with high population density without access to alternative and affordable energy sources. In such areas, people are vulnerable to illness and malnutrition because of lack of resources to heat homes, cook food and boil water etc.

5. **Clean water** -

The continued loss of forests and the destruction of watersheds reduce the quality and availability of water supplied to household use and agriculture. The availability of clean drinking water is a concern in dozens of the world’s largest cities. In one of the best documented cases, New York took steps to protect the integrity of water sheds in the Catskills to ensure continued provision of clean drinking water to 9 million people. Protecting the ecosystem was shown to be for more cost-effective than building & operating a water-filtrations plant.

6. **Social relations** -

Many cultures attach spiritual aesthetic, recreational, and religious values to ecosystems or their components. The loss or damage to these components can harm Social relations both, by reducing the bonding value of shared experiences as well as by causing resentment towards groups that profit from their damage.
7. **Freedom of choice**

Toss of biodiversity which is often means a loss of sometimes irreversible and choices. The notion of having choices available irrespective of whether any of them will be actually picked is an essential constituent of the freedom aspect of well-being.

8. **Basic Materials for a good life and sustainable livelihood**

Biodiversity provides various goods such as plants and animals that individuals need in order to earn an income and secure sustainable livelihoods.

In addition to agriculture, biodiversity contributes to a range of other sectors, including ecotourism, pharmaceuticals, cosmetics and fisheries tosses of biodiversity. Such as the collapse of the New found land cod fishery can compose substantial costs at local and national levels.

**Regimes on Biodiversity Loss**

In response to the extinction crisis, several national and international regimes have developed over the period to check the further loss of species either by putting a ban or regulating the use of natural resources. These regimes exercise control through setting norms and patterns of behaviors and regulating those conduct of counties which have impact on biodiversity of their territories.

The 1972 UNESCO World Heritage Convention established that biological resources such as plants were the common heritage of mankind. The rules probably inspired the creation of great public banks of genetic resources located outside the source-countries.

New global agreements (e.g. Convention on Biological Diversity), now give sovereign national rights over biological resources. The idea of static conservation of biodiversity is disappearing and being replaced by the idea of resource and innovation.

**Convention on Biological Diversity**

- Among all international agreements, the Convention on Biological Diversity occupies
the most significant position due to its blanket character which covers all species and habitats. It is an international legally finding treaty that was adopted in Rio de Janerio in June 1992. The Convention has three main goals -

a. Conservation of biological diversity,

b. Sustainable use of its components, and

c. Fair and equitable sharing of benefits arising from genetic resources.

The Convention recognized for the first time in international law that the conservation of biological diversity is a "a common concern of humankind" and is an integral part of the development process. It covers all ecosystems, species and genetic resources. It sets principles for the fair and equitable sharing of the benefits arising from the use of genetic resources notably those destined for commercial use. It also covers the rapidly expanding field of biotechnology through its Cartagena protocol on Biosafety. Importantly, the Convention is legally binding, countries that join it are obliged to implement its provisions.

Some of the significant issues dealt with under the Convention include -

- Measures and incentives for the conservation and sustainable use of biological diversity.

- Regulated access to genetic resources and traditional knowledge, including prior informed consent of the party providing resources.

- Sharing, in a fair and equitable way, the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the contracting party providing such resources.

- Access to and transfer of technology, including biotechnology, to the government and/or local communities that provided traditional knowledge and for biodiversity resources,
• Technical and scientific cooperation.

• Impact assessment.

• Education and public awareness.

• Provision of financial resources.

• National reporting on efforts to implement treaty commitments. (For details see Annex 4)

**Cartagena Protocol**

The Cartagena protocol on bio-safety of the Convention, also known as the Bio-safety Protocol, was adopted in January 2000. The Bio-safety protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern bio-technology.

The Bio-safety protocol makes clear that products from new technologies must be based on the precautionary principal and allow developing nations to balance public health against economic benefits. It'll for example let countries ban imports of a genetically modified organism if they feel there is not enough scientific evidence the product is safe and requires exporters to label shipments...containing genetically altered commodities such as corn or cotton.26

**Convention on International Trade in Endangered Species**

In 1975, this Convention was specially designed to ensure worldwide protection of endangered flora and fauna. It regulates trade in living specimen as well as products derived from listed species.

Besides, the convention on Biological Diversity, which is an international treaty to cover all the species and specific habitats, several other treaties have been entered into to conserve individual species and specific habitats such as International Treaty on Plant

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26 https://bch.cbd.int/protocol/
Genetic Resources for food and Agriculture, which aims at recognizing the enormous contribution of farmers to the diversity of crops that feed the world and establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials etc. Migratory Bird Treaty Act of 1918 which makes it unlawful to pursue, hunt, take, capture, kill or sell birds listed therein (migratory birds), International convention for the regulation of whaling which was signed in 1946 to provide for the proper conservation on whole stocks through putting a moratorium on commercial whaling in 1986 a creation of the southern ocean whale Industry etc.27

Besides these international treaties several other measures are being taken by many global and local organizations and institution to arrest the rapid decline of biodiversity. Amongst these, the role of International Union for Conservation of Nature (IUCN) which aims to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable, is very crucial. It issues world's most comprehensive inventory of global conservation status of plant and animal species which is known as IUCN Red List. It sends an alarm throughout the world through declaring species as extinct, threatened and at lower risks. World Wide fund for Nature is another global institution providing solution that will solve our planet's big environmental challenges, so helping people and nature to thrive. It has released a list named Global 200 which is a list of eco-regions identified by the WWF as priorities for conservation.

**Critical appraisal of regime on biodiversity loss**

The regime on Biological Diversity (CBD) is another of the world’s multilateral environmental agreements that has resolutely failed to achieve its stated purpose. As Ahmed Djoghlaf, former Executive Secretary of the CBD told a high level forum in Chengdu China:28

"The target set by world governments in 2002, to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level, has not

27 [https://cites.org/eng/disc/text.php](https://cites.org/eng/disc/text.php)
been met. No government claims to have completely met the 2010 biodiversity target at the national level, and around one-fifth state explicitly that it has not been met. Indeed, the current biodiversity statistics are as worrying as ever. Species that have been assessed for extinction risk are on average moving closer to extinction …. [T]he five principal pressures directly driving biodiversity loss (habitat change, overexploitation, pollution, invasive alien species and climate change) are either constant or increasing in intensity.’’

This dismal assessment is of course not the fault of Mr Djoghlaf nor the CBD itself, but the parties to the Convention, namely the nations of the world. Indeed the CBD is an institution of obvious weakness, hostage always to national capitals and wider power politics. The CBD possesses no power to compel compliance or punish non-compliance. The USA has never even ratified the CBD.

There is a tendency for states to hide behind membership of multilateral institutions – which are then undermined and rendered impotent by lack of effective commitment to agreed goals by national governments. Such has been the fate of the CBD. There is also a tendency for NGOs to become overly fixated on the same multilateral institutions, tending to forget that voluntary multilateral commitments are no substitute for the tasks of shifting power, confronting the hard facts of political economy and forcing change in development pathways in national contexts. Overwhelmingly, national politics and economics dominate international environmental negotiations, not visa versa.

The international agreements struck so far have failed miserably in halting the world's biodiversity crisis. All the international meetings have done so far is to diffuse responsibility for the crisis, allowing member states to hide behind each other's failures. They create a false impression of action, insulating governments from public pressure. The apathy and indifference with which governments are prepared to let another environmental calamity develop is unacceptable. Defending the wonders of the natural world, governments should supplement the current treaty-making process with something real and specific, in such a way that success becomes possible and failure accountable.