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Sustainable development and protection of endangered species fauna and flora in the wild in developing countries

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Abstract

The application of the principle of sustainable development in the protection of endangered species of fauna in the wild, naturally throws up the question of implementation not only of the principle, but of laws that protect species fauna and flora in the global arena. Most developing countries are yet to develop strong political and socio-economic institutions to guarantee the basic needs of their citizens, without necessarily fettering the ability of future generations to harness some of the resources that would continue to sustain life. In most of these countries, because of weak infrastructure, poverty, corruption and the perpetuation of obsolete cultural traditions, the people have continued to eke out a living from the natural environment, especially wildlife without a definite plan as to how to balance the food chain and maintain the ecosystem and biodiversity. This has tilted the *predator-prey-relationship* out of balance and exposed the moral intransigence, and tendency of man to overstep the biblical injunction to dominate and subdue the earth. The precarious situation of developing countries therefore, in the entire quagmire of global conservation efforts to protect endangered flora and fauna, calls for a closer scrutiny to determine the parameters of the phenomenon of failure, especially of the international endeavour to codify and criminalise the indiscriminate destruction of endangered flora and fauna, in these countries. This Article therefore intends to analyse the implementation status of international, regional and national legislations that purport to protect endangered species fauna and flora in the wild, in developing countries. This analysis is proposed to be done within the context of the principles of sustainable development, which have been roundly ignored in the quest for economic development and exploitation of natural resources in developing countries, and other development variables that may exist in these countries.

Keywords: Sustainable Development; Fauna; Flora; Endangered Species; Wildlife; Environment; Developing Countries; CITES

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1. Introduction

Global concern over disappearing species led to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), in 1973. CITES represents a new attitude towards international attempt in protecting endangered species fauna and flora in the wild. This Article examines the sustainable development and protection of endangered species fauna and flora in the wild in developing countries. This raised other vital issues like the rationale for insistence by developed countries on strict application of wildlife laws in developing countries. This Article also examined the link between wildlife protection and the concept of sustainable development, the right to development, developing countries, economic growth and sustainable development. Further objective examined in this Article focused on preservation, conservation and economic development in developing countries; public trust doctrine and wildlife protection. This Article analysed and brought into focus the socio-economic, socio-political and socio-cultural environment in developing countries, sustainable development and the protection of endangered species fauna and flora in the wild. Finally, the adverse governmental policies affecting habitat and protection of endangered species fauna and flora in the wild are also examined. The methodology adopted in this Article is doctrinal, drawing upon primary and secondary sources of information contained in existing relevant international environmental treaties, conventions, agreements, protocols and national laws protecting habitats, species fauna and flora, case law, journals, textbooks and encyclopaedias, website blogs and internet sources. This Article discovered that the issue of protecting endangered species, particularly in developing countries is interlinked with the concept of sustainable development. There is also the problem of enforcement, poverty and the complex issue of domestication of these treaties and Conventions by party nations before they become enforceable as national laws. Enforcement and compliance with the international and national wildlife protection laws in developing countries remain an uphill struggle due to political factors, institutional constraints, national focus on economic growth due to rising poverty level, shortage of funding and manpower, local protectionism and continued illegal trade in endangered species. This Article recommended among other things for a revision of the international wildlife treaties and Conventions to take into account local conditions in developing countries. These treaties and Conventions do not fit into the local programmes of developing countries. In conclusion, this Article maintained that these shortcomings must be addressed for meaningful cohesion in the legal regime for the protection of endangered species fauna and flora. Developing countries must be allowed by the developed countries to move at their own pace in the protection of endangered species fauna and flora.

2. The right to development

The right to development implies the right to improvement and advancement of economic, social, cultural and political conditions. Sustainable development ensures the wellbeing of the human person by integrating social development, economic development, and environmental conservation and protection. It is therefore, impossible to separate the well-being of the earth. It is therefore, important that sustainable development places importance on the protection of the earth and the earth's resources. This is evident in most

international documents that contain the environmental aspect of development. They all affirm and reaffirm that "human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature…" In a nutshell, sustainable development ensures that the living conditions of human beings are permanently improved. In effect, social and economic developments must be carried out in a way that is environmentally and ecologically friendly which ensures the continual rejuvenation and availability of natural resources for future generations.[1] For an effective realization of sustainable development, there must be active participation of those who are affected or likely to be affected by the proposed changes. Those affected or likely to be affected by the changes must be the ones determining the changes. The result is the enjoyment and sharing of the benefits and products generated by the change.

Elsewhere, sustainable development has received a broader definition and acceptation:

> *Sustainable development is … 'development that lasts' – i.e. a path along which the maximization of human wellbeing for today's generation does not lead to declines in future wellbeing … Human wellbeing includes not only the satisfaction of economic needs, but also aspirations for a clean and healthy environment, and preferences in terms of social development. Types of capital that sustain well-being… include natural, human, and social capital.*

Sustainable development therefore, has three main components: environmental, social and economic (Pearce and Barbier, 2000). It also clearly has important temporal dimensions (OECD Library, 2001a). The array of serious environmental challenges and problems facing developing countries due to unsustainable exploitation and degradation of natural resources, forests, soil, wildlife, fresh water and pollution threaten to undermine the protection of endangered species fauna in the wild, nay economic development prospects of these countries. Thus, the biggest environmental challenge of reconciling development needs of developing countries with the sustainable management of their natural resources. Poverty remains the main cause of species extinction, due to massive unsustainable killing of the species fauna and harvesting of species flora for economic and commercial sustenance of the people living in developing countries. Without significant improvement in the living conditions in developing countries, environmental policies, programmes and legislations will achieve little success. For effective implementation of sustainable development programmes in enhancing protection of wildlife and endangered species fauna in the wild, the root cause, which is poverty, must be addressed. Poverty has occasioned human wildlife conflict in developing countries, and this is fast becoming a serious threat to the survival of many endangered species in the region. According to the World Conservation Union[2], human wildlife conflict occurs when wildlife's requirements overlap with those of human populations, creating costs to residents and wild animals. Human wildlife conflicts undermine human welfare, health and safety, and have economic and social costs which negate the principle of sustainable development (Butler, 2000). A series of trends have contributed to the problem of unsustainable practices in developing countries that adversely affect the protection of endangered species fauna in the wild. They are;

[1] There are many definitions of sustainable development; including the landmark one which first appeared in 1987 from the World Commission on Environment and Development's the Brundtland Commission Report, United Nations (1987), *Our Common Future*, Brundtland Report, Oxford University Press, Oxford.

[2] The Vth IUCN World Parks Congress (2003), Durban, South Africa, World Park Congress 2003.

human population growth, land use transformation, species habitat loss, degradation and fragmentation, climate factors, stochastic events (e.g. fire) and a host of other factors.

3. Developing countries, economic growth and sustainable development

Economic growth in developing countries is the key to sustainable development and sustainable practices that will ensure effective protection of species fauna in the wild. A meaningful concept of sustainable development has to be holistic in nature as the economic, environmental and social aspects of human behaviour and quality of life are closely linked (Mehta, 2010). Therefore, sustainable development necessarily involves inclusive growth that is also environmentally sustainable.

There is economic sustainability which is reinforced by Agenda 21 which clearly identified information, integration, and participation as key building blocks to help countries achieve development that recognizes these interdependent pillars. It notes that in sustainable development everyone is user and provider of information. It stresses the need to change from old sector-centred ways of doing business to new approaches that involve cross-sectoral co-ordination and the integration of environmental processes. Agenda 21, further emphasizes that broad public participation in decision making is fundamental to attaining sustainable development (Allen, 2007). According to HasnaVancock, sustainability is a process which tells of a development of all aspects of human life affecting sustenance. It means resolving the conflict between the various competing goals, and involves the simultaneous pursuit of economic prosperity, environmental quality and social equity famously known as three dimensions (triple bottom line) with the resultant vector being technology, hence it is a continually evolving process; the 'journey' (the process of achieving sustainability) is of course vitally importance, but only as a means of getting to the destination (the desired future state). However, the 'destination' of sustainability is not a fixed place in the normal sense that we understand destination. Instead, it is a set of wishful characteristics of a future system (Hasna, 2007).

Sustainable development is an eclectic concept.[3] There is another concept which arises in this discussion, that is environmental sustainability. Environmental sustainability is the process of making sure current processes of interaction with the environment such as species in the wild harvesting are pursued with the idea of keeping the environment 'as pristine as naturally possible based on ideal-seeking behaviour'. In the context of our discussion here, an unsustainable situation occurs when species in the wild fauna and flora are used up faster than it can be replenished. Sustainable development requires that human activity should use

[3] Sustainable development is an eclectic concept, as a wide array of views fall under its umbrella. The concept has included notions of weak sustainability, strong sustainability and deep ecology. Different conceptions also reveal a strong tension between ecocentrism and anthropocentrism. Many definitions and images of sustainable development coexist. Broadly defined, the sustainable development mantra enjoins current generations to take a systems approach to growth and development and to manage natural, produced, and social capital for the welfare of their own and future generations.
A useful articulation of the values and principles of sustainability can be found in the Earth Charter. It offers an integrated vision and definition of strong sustainability. The document, an ethical framework for a sustainable world, was developed over several years after the Rio Earth Summit in 1992 and launched officially in 2000. The Charter derives its legitimacy from the participatory process in which it was drafted, which included contributions from hundreds of organizations and thousands of individuals, and from its use since 2000 by thousands of organizations and individuals that have been using the Earth Charter as an educational instrument and a policy tool.

nature's resources at a rate which they can be replenished naturally. Thus, hunting and killing of wild species fauna for commercial and economic gains at a rate that makes replenishing them difficult or impossible (thus, extinction or endangered) is quite unsustainable. This is so, because, the concept of sustainable development is intertwined with the concept of carrying capacity. The long-term result of hunting and killing wildlife for economic reasons will be the inability to sustain their existence. Such activity or activities when not controlled by legislation and effective implementation could lead to extinction, of species. Sustainable development is said to set limits on the developing world. While developed countries polluted significantly during their development, the same countries encourage developing countries to reduce pollution and harvesting of wildlife for economic sustenance, which most times impedes growth. The implementation of sustainable development should be carried out with the peculiar lifestyles of developing countries in mind. The concept of "Sustainable Development" raises several critiques at different levels. John Baden[4] views the notion of sustainable development as dangerous because the consequences have unknown effects.

Some criticize the term "sustainable development", stating that the term is too vague. For example, both Jean-Marc Jancovici and the philosopher Lue Ferry express this view. The latter writes about sustainable development: "I know that this term is obligatory, but I find it also absurd, or rather so vague that it says nothing". Luc Ferry adds that the term is trivial by a proof of contradiction:

> *who would like to be a proponent of an untenable development! Of course no one! [..] The term is more charming than meaningful. [..] Everything must be done so that it does not turn into Russian-type administrative planning with ill effects.*

Omaka (2004, p. 32), equally has stated thus:

> *We can summarise the necessary conditions for sustainable development as constancy of the natural capital stock; more strictly the requirement for non-negative changers in them stock of natural resources, such as soil and soil quality, ground and surface water and their quality, land biomass, water biomass and the waste assimilation of the receiving environments*[5].

Sustainable development has become obscured by conflicting world views, the expansionist and the ecological, and risk being co-opted by individuals and institutions that perpetuate many aspects of the expansionist model. The proponents of the de-growth reckon that the term of sustainable development is an oxymoron. According to them, on a planet where 20% of the population consumes 80% of the natural resources, a sustainable development cannot be possible for this 20%. According to the origin of the concept of the sustainable development, a development which meets the needs of the present without compromising the ability of future generations to meet their own needs, the right term for the developed countries should be a sustainable de-growth.

In 2007 a report for the U.S. Environmental Protection Agency stated:

> *While much discussion and effort has gone into sustainability indicators, none of the resulting systems clearly tells us whether our society is sustainable. At best, they can tell us that we are heading in the wrong direction, or that our current activities are not sustainable. More often,*

[4] Chairman of the Foundation for Research on Economics and the Environment (FREE).

> *they simply draw our attention to the existence of problems, doing little to tell us the origin of those problems and nothing to tell us how to solve them. Nevertheless a majority of authors assume that a set of well defined and harmonized indicators is the only way to make sustainability tangible. Those indicators are expected to be identified and adjusted through empirical observation (trial and error).*

The most common critiques are related to issues like data quality, comparability, objective function and the necessary resources. However, a more general criticism is: How can a sustainable development be achieved at global level if we cannot monitor it in any single project? For developing countries to reduce significantly the rate of hunting and killing wildlife species fauna for economic gains, the number of people living in poverty should be reduced, through long term, sustainable economic growth. Open trade and free markets governed by prudent policy and sound regulation is very important. Developing countries must build economic foundations, grow businesses, invest in people and meaningfully fight corruption.

Importantly, wildlife species fauna and flora remain central to the livelihoods of most people living in rural areas in developing countries. These people live below the poverty line. Instead of thinking on how to protect and preserve endangered species, wildlife fauna and flora, the people in developing countries have priorities focused on economic development to alleviate poverty. Though national legislations exist, environmental protection, protection of high conservation value forests, biodiversity, endangered species and actions to tackle climate change, receive less attention. Most governments and NGOs which receive funds from international bodies do not apply such funds for the purpose for which they are meant. Poverty and corruption cause them to divert the funds for private and non-related purposes. Instead of improving the lives of the people, poverty and squalor persists, as living costs outpace standard incomes. In the face of these challenges, people now resort to all kinds of businesses to survive, and this does not exclude trade in prohibited activities of wildlife.

4. Preservation, conservation and economic development in developing countries

Environmental issues remain a major public policy challenge. In the past four decades, there has been a global response regarding environmental issues. Commendable progress has taken place in tackling a variety of very complex and technical problems associated with a historical disregard of these issues. But environmental issues continue to be some of the most important and perplexing problems confronting all governments today. The technical complexity of the subject has posed enormous challenges to politicians and the public. It was or is still believed that the issues involved are best suited for scientists to grasp and inquire about. Even then, environmental issues have in themselves created disharmony in opinions, researches and agreements between scientists who specialize in a particular field of knowledge. All these puts lay policy makers in a very difficult dilemma. The resolution of environmental issues also involves a careful balancing of competing interests and values. As is the case, business interests mostly resist attempts at environmental regulation and this resistance usually reflects a public demand for products and development. Some school of environmentalists oppose many aspects of continued human economic development because of threats to

the remainder of the ecosystem. Others are mostly concerned about present and future threats to the health of the human population. In all these naturally, there emerged different schools of thought: the preservationists and the conservationists. There is also the economic growth versus environment group.

Preservation and conservation are twined and linked together. Environmental preservation in developing countries and other parts of the world, is viewed as the setting aside of natural resources to prevent damage caused by contact with humans or by certain activities, such as logging, mining, hunting, fishing, wildlife species fauna and flora exploitation for commercial purposes, often to replace them with new human activities such as tourism and recreation (Cunningham et al., 1998). Regulations and laws may be enacted for the preservation of natural resources. Conservatism should not be confused with conservation. Conservatism is a political and social philosophy that promotes the maintenance of traditional institutions and supports at the most, minimal and gradual change in the society. Some conservatives seek to preserve things as they are, emphasizing stability and continuity, while others oppose modernism and seek a return to the way things were. The term has since been used to describe a wide range of views, not excluding environmental conservatism or green conservatism. This group seeks to strengthen the stance on environmental issues, and supports efforts to conserve natural resources and protect human and environmental health.

Conservation (ists), seeks to protect natural resources, including animal, fungus and plant species as well as their habitat for the future. Conservation is far broader and far-reaching than conservatism. Conservation is used more broadly to include the setting aside of natural areas and the active protection of wildlife for their inherent value, as much as for any value they may have for humans. Such values are usually economic. These environmental issues present special difficulties for developing countries. These countries pose the biggest potential threat of exacerbating threats to the environment. Without massive assistance from richer countries, the developing countries simply cannot afford to match environmental controls being adopted by developed countries, no matter the type of legislations they put in place. There will be no preservation, conservation or conservatism and economic development without national lands, natural forests and species protection. About 650 million acres of land are owned by the national governments. Much of this land is undeveloped land in western states. For the past several decades there has been an on-going struggle between protecting lands in their natural state and the desire to convert these lands toward economic benefit. For example, the Wilderness Society recently identified 15 locations as America's most endangered wild lands.

For a meaningful preservation, conservatism and economic development, our natural forests must be protected. The natural forest must be protected from intrusion as the removal of trees result in destruction of forest habitats and many associated fauna and flora in the wild. Through a massive global educational effort, some progress has been made to halt tropical rainforest destruction, particularly in developing countries but concern has not diminished and the rate of destruction of these forests does continue. The build-up of greenhouse gases in the atmosphere is being driven in part by deforestation, and global warming threatens to emerge as a major factor that drives forest loss in the next century, leading in turn to even greater emissions. There is a growing recognition that the rate of destruction is occurring more rapidly in the poorest countries and that if the resources of these countries were greater, there would be less destruction

as there would be recognition of the long term economic benefits of maintaining these forests. The preservation of endangered species is a global concern. Plant and animal species are being particularly threatened in tropical countries, many of which are undergoing a massive change in habitat as their economies modernize and their populations increase. Left unchecked, U.S., EU, and World Bank environmental and trade policies as well as the opportunities for cronyism, corruption, and green protectionism that they – provide will inflict massive economic misery on some of the world's poorest nations. Tens of millions of Asian and African men and women rely on the jobs and economic growth provided by export industries. The green NGOs' campaign to restrict production of forestry products, palm oil, GMOs, and other commodities in developing countries combined with U.S. and EU protectionist measures block future job creation, higher living standards, and poverty reduction in the very countries the NGOs claim to be protecting. The EU and the U.S. should stop green protectionism because it flouts decades of beneficial work in expanding free trade around the world. The West should uphold the core principle of economic freedom and poverty alleviation through free trade and investment to encourage economic growth. Green protectionism that undermines economic growth in developing countries is reprehensible. The WTO should define green protectionism as an illegitimate (and actionable) intervention by governments in the marketplace.

5. Public trust doctrine and wildlife protection

In 1916, Theodore Roosevelt stated that: [6]

> *Defenders of the short-sighted men who in their greed and selfishness will, if permitted, rob our country of half its charm by their reckless extermination of all useful and beautiful wild things sometimes seek to champion them by saying that "the game belongs to the people". So it does; and alive, but to the unborn people. The "greatest good for the greatest number" applies to the number within the womb of time, compared to which those now alive form but an insignificant fraction. Our duty to the whole, including the unborn generations, bids us to restrain an unprincipled present-day minority from wasting the heritage of these unborn generations. The movement for the conservation of wildlife and the larger movement for the conservation of all our natural resources are essentially democratic in spirit, purpose, and method.*

The Public Trust Doctrine (PTD), with its origin in Roman civil law (Batcheller, 2010) is an essential element in wildlife protection. The Doctrine establishes a trustee relationship of government to hold and manage wildlife, fish, and waterways for the benefit of the resources and the public. Fundamental to the concept is the idea that natural resources are deemed universally important in the lives of people, and that the public should have an opportunity to access these resources for purposes that traditionally include wildlife game, hunting, trapping, fishing and travel routes, (for example, the use of rivers for navigation and

[6] Theodore "Teddy" Roosevelt was the 26th President of the United States (1901-1909). Born October 27, 1858, New York City, New York, U.S. Died January 6, 1919 (aged 60) at Dyster Bay, New York, U.S. Attended Harvard University and Columbia University. Author, historian, explorer, conservationist civil servant. A reformed Dutch (religion).

commerce)[7]. The public trust doctrine is the principle that certain resources are preserved for public use, and that the government is required to maintain them for the public's reasonable use (Sax, 1970). The ancient laws of the Roman Emperor Justinian held that the seashore not appropriated for private use was open to all. This principle became the law in England as well (Slade, 2008). In the *MagnaCarta* [8] in England centuries later, public rights were further strengthened at the insistence of the nobles that fishing weirs which obstructed free navigation be removed from rivers.

These rights were further strengthened by later laws of England and subsequently became part of the common law of the United States as established in the case of *Illinois Central Railroad v. Illinois* [9] where the Illinois Legislature granted an enormous portion of the Chicago harbor to the Illinois Central Railroad. A subsequent legislature sought to revoke the grant, claiming that original grant should not have been permitted in the first place. The court held that common law public trust doctrine prevented the government from alienating the public right to the lands under navigable waters (except in the case of very small portions of land which would have no effect on free access or navigation). In subsequent cases, it was held that this public trust doctrine (right) extended also to waters which were influenced by the tides regardless of whether or not they were strictly navigable. This concept now applies to natural resources in the soil and water and forests over those public trust lands. This doctrine has been primarily significant in two areas: land access and use and natural resource law (including wildlife protection) (Lucas, 2009). It is most often invoked in connection with access to the seashore (Ryan, 2004). The doctrine has also been used to provide public access across and provide for continued public interest in those areas where land beneath tidally influenced waters has been filled, and has also been used to prevent the private ownership of fish stocks and crustacean beds (Huffman, 2003).

The public trust doctrine is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands.[10] In *M.C. Mehta v. Kamal Nath and others,*[11] the Indian Supreme Court held that the public trust doctrine applied in India. The court stated that the pristine glory of the natural resources, the environment and the ecosystems cannot be permitted to be eroded for private, commercial or any other use unless the courts find it necessary in good faith, for the public good and in the public interest to encroach upon the said resources. The PTD is an essential element of North American wildlife law (Bean and Rowland, 1997). It is also recognized as an essential foundation of what has been termed the "North American Model of Wildlife Conservation" (Geist, 1995). This model according to Gordon R. Batcheller,[12] is viewed as an important construct of law, policy, program framework, and scientific investigation that has led to the protection, conservation, and restoration of wildlife populations in the U.S. and Canada (Geist et al., 2006). It has been argued that the underpinnings of the PTD and the future

7 Ibid, p. 9, see Annear, T.C. (2002),"The Public Trust Doctrine", in *Instream Flows for Riverine Resource Stewardship,* Instream Flow Council, Wyoming, U.S.A., 9 pages.

8 The English Charter originally issued on 15 June 1215, and later modified, required King John of England to proclaim certain liberties, and accept that his will was not arbitrary, for example, by explicitly accepting that no "freeman" could be punished except through the law of the land, a right which is still in existence today.

9 146 U.S. 387 (1892).

10 *National Audubon Society v. Superior Court,* California Supreme Court, 1983.

11 (1997) 1 SCC 388.

12 *Ibid* p. 9.

relevance and successful application of the Model may be at risk due to recent changes in society, government policies and case law (Organ, 2006). It is also necessary to define the term 'trust' in its application to wildlife protection. Simply defined, a trust is a collection of assets committed or entrusted to one to be managed or cared for in the interest of another. The party to whom the trust assets are committed is commonly referred to as the trustee, whereas the party for whom the assets are being managed is referred to as the beneficiary of the trust (Batcheller et al., 2010).

In this wise, the PTD holds that publicly owned wildlife resources are entrusted to the government (as trustee of these resources) to be managed on behalf of the public, the beneficiaries.[13] In effect, governmental institutions do not own trust resources; instead they are owned by the public and are entrusted in the care of government and its agencies to be safeguarded for the use and benefit of the public (Sax, 1970). The PTD has been strengthened by the courts in advanced judicial jurisdictions.[14] The public trust doctrine therefore, provides for a powerful regulatory and supervisory role for the state with regard to environmental protection and natural resources conservation. The judiciary could play an important role in directing public policy for protecting wildlife and natural resource interests. The courts could intervene to reorient legislatures and administrative agencies in environmental and natural resource regulation. The most celebrated application of the public trust doctrine came in 1983, when the California Supreme Court in *National Audubun Society v. Superior Court*[15], stated that the 'core of the public trust doctrine is the state's authority as sovereign to exercise a continuous supervision and control over, the waters of the state to protect ecological and recreational values. [16]According to Brewer and Libecap (2009) as a result of the ruling, the public trust doctrine was seen as a new mechanism that could be applied by the judicial system to force water users and the state legislature and administrative agencies to directly consider the values of

13 *Ibid* see, also Organ and Batcheller (2009).

14 In the U.S., English common law was applied to the 13 colonies, and eventually redefined and assigned to the states by the courts following America's independence. In doing so the American courts abolished the English system of royal prerogatives and reestablished or restored and strengthened the full public trust concept. In 1821 the New Jersey Supreme Court, in deciding *Arnold v. Mundy*, corrected England's diversions from Roman civil law, which were only partially restored by the *Magna Carta*, by stating that the ownership of water and underlying lands transferred to New Jersey's citizens upon statehood, thus returning public trust law closer to the original Roman concept.
The first federal court decision affirming the PTD occurred in 1842 when the U.S. Supreme Court in *Martin v. Waddel* found that the public held a common right to fish in navigable and tidal waters of New Jersey because they and their underlying lands were owned by the state for the common use by the people. Subsequent court findings reaffirmed such public ownership including cases addressing the Equal Footings Doctrine *(Shively v. Bowl by 1894),* which described rights of states newly admitted into the Union. Traditional public interests protected by the PTD were navigation, commerce, and fishing. Subsequent court cases mainly addressed these three interests during the 20th Century. However, *Geer v. Connecticut (1896)* included "wild fowling" within a state's trustee responsibilities. Although partially reversed in *Hughes v. Oklahoma (1979)*, state statutes and state courts continue to assert state trusteeship of wildlife. Recent case law has markedly expanded the application of the Doctrine. For example, the California Supreme Court in *Marks v. Whitney (1971)* opined that considering the changing needs of the public, a state is not bound to protect just the traditional interests addressed by early case law. Rather, that court found that ecological protection was a public interest afforded oversight by the Doctrines. Other recent case law has expanded the relevance of the Doctrine to include such diverse topics as wildlife habitat; the open seas; environmental protection from development, pollution, and invasive species; recreational activities such as swimming, parks, and historic monuments; public health; bathing; flood prevention; aesthetic values such as open and scenic beauty; diversion of water for domestic, industrial, and agricultural purposes; religious and cultural interests; and even the electromagnetic spectrum.

15 685, p. 2d. 709.

16 *National Audubun Society v. Superior Court*, 685 p. 2d. 712. For public trust application to wildlife, see Meyers, G. D. (1989), "Variation on a Theme: Expanding the Public Trust Doctrine to Include Protection of Wildlife", *Environmental Law,*Volume 19, pp. 723-735.

alternative, often neglected water demands in allocating access and use. It must be noted that legal scholars are outlining new applications of the doctrine and environmental advocates are being encouraged to petition for judicial intervention in the name of the public trust.[17]

With a history spanning upwards of fifteen centuries or potentially more, it would be impossible to cite every publication, historical record or litigation associated with the public trust doctrine. Fortunately, such a bibliography is not necessary to illustrate the constantly evolving history of the doctrine as it applies to wildlife management responsibilities. As it seems to be the case with many important issues in America, litigation, and the occasional Act of Congress, have played roles in defining the responsibilities of government under the public trust doctrine. A profile of some of the Acts of U.S. Congress and Supreme Court rulings that have defined the public trust doctrine include:

(i) In 1842 the Supreme Court ruled that the *Magna Carta* has settled the question of who owns fish and wildlife and that King Charles II did not have the authority to give away the dominion and property of lands in colonial American. The court further ruled that since the American Revolution the people held public trust responsibilities for fish and wildlife except for rights specified in the U.S. Constitution.

(ii) In 1892, the Supreme Court declared that the "Sovereign Lands" of a state are held in trust by the State for all present and future generations, and that such land may not be sold for development incompatible with uses covered by the Public Trust Doctrine.[18]

(iii) In 1896, the Supreme Court declared that the states property right in game was to be exercised as a trust for the benefit of the people of the state.[19] Up until this ruling the 10th Amendment of the Constitution only appeared to give states jurisdiction over wildlife. This court case is considered by many to be the core ruling of states public trust authority over wildlife but it is somewhat controversial because it does so in terms of ownership.

(iv) The Lacey Act of 1900 utilized the power of Congress to regulate interstate commerce to initiate federal involvement in wildlife conservation by prohibiting transportation across state lines of wildlife killed in violation of state laws.[20] Since 1900 the Lacey Act has been amended numerous times as federal and state government public trust authorities have been further refined.

(v) It took about seven years (1913-20), two Acts of Congress (the Migratory Bird Act of 1913 and the Migratory Bird Treaty Act of 1918) and two Supreme Court rulings (the first ruled the 1913 Act unconstitutional and the second upheld the 1918 Act) before the role of Congressional Treaty Powers were sorted out as related to migratory birds and the public trust doctrine concept applied to the management of migratory birds.[21] The 1918 Act and subsequent Supreme Court ruling gave the federal government a strong basis for leading the conservation and management of migratory birds resulting in the application of the public trust doctrine in many treaties for the protection of migratory birds.

17 Examples of the enthusiastic application of the doctrine include Slade (1990), Meyers (2003), Fischman (2002), Carpenter (2005), Blumm (1989), Wilkinson (1989), and Huffman (2006).
18 *Illinois Central Railroad v. Illinois*, 146 U.S. 387 (1892).
19 *Greer v. Connecticut*, 161 U.S. 519 (1896).
20 Lacey Act of 1900 – 16 USC.
21 Migratory Bird Treaty Act of 1918, 39 Stat. 1702, T.S. No. 628; 16 USC, and *Missouri v. Holland*, 252 U.S. 416 (1920).

(vi) In 1976 the Supreme Court decreed that federal authority may be superior to that of the states in some wildlife management situations but the extent of the authority remains unclear.[22] This relatively undefined aspect of the ongoing public trust doctrine debate is an area likely to draw additional consideration by the courts over time because of the broader states rights versus federal powers (and related issues) debates.

For the first hundred, or so, years of America's history public trust doctrine litigation and legislation generally tended to focus on providing for the public use of waterways for commerce, navigation, and fisheries; a consequence of the mandates established by Emperor Justinian. Court rulings at both the federal and state levels – and legislation including the relatively recent federal Endangered Species, Marine Mammal and Environmental Protection Acts – over the last 150 years, or so, added hunting. In recent years courts have added swimming, recreational boating, and preservation of lands in their natural state in order to protect scenic and wildlife habitat values as codified elements of the public trust doctrine. Wildlife management has historically been, and continues to be, a difficult and often contentious arena. Contrary to the political hype of the animal rights movement there are no magic bullets. To drive wildlife management on the premise of political agenda, on the premise of ballot box biology – when at least fifteen hundred years of history, science, litigation and experience has demonstrated that government (the sovereign) must make such decisions so that they reflect the balanced needs of society and the resource is simply wrong.[23]While green energy is on the rise, there are casualties of even the most well-intentioned projects (Abbott and Jones, 2008). The Court of Appeal, First Appellate District upheld the dismissal of a public trust enforcement action against the owners and operators of wind turbines in the Altamont Pass area (the "Operators"). According to the Centre for Biological Diversity ("CBD"), the turbines injure and kill raptors and other birds. Ultimately, CBD was successful in clarifying that the birds are a public trust resource of all the people of the state. However, the appellate court held that the proper party to bring an action against is the public agency with permitting authority, rather than the Operators. The appellate court first looked at the history and applicability of the public trust doctrine, and offered citations to a number of important U.S. Supreme Court and state law describing the nature of the doctrine. California recognizes that certain public resources, such as public lands, beaches, and waterways have mass social value, and that the government should act to protect those resources for the benefit of the public's future use. Citizens can sue the government to enforce these principles when it violates its duties as "trustee". In this case, the appellate court determined that the public trust doctrine applies to wildlife as well as to the common waters of the state, citing two historical cases including P*eople v. Stafford Packing Co*.[24] and *California Trout, Inc. v. State Water Resources Control Bd.*[25] Importantly, the appellate court reviewed a recent case handed down by the California Supreme Court, *Environmental Protection and Information Centre v. California Dept of Forestry & Fire Protection*[26] which referred to "two distinct public trust doctrines" – "the common law doctrine, which involves the government's 'affirmative duty to take the public trust into account in the planning and allocation of water

22 *Kleppe v.New Mexico*, 426 U.S. 529 (1976) regarding the Wild Free-Roaming Horses and Burros Act, 16 USC 1331.
23 See generally, Owens (2001).
24 (1925) 195 Cal. 548.
25 (1989) 207 Cal. App. 3d 585.
26 (2008) 44 Cal. 4th 459.

resources" and "a public trust duty derived from statute, specifically Fish and Game Code section 711.7, pertaining to fish and wildlife." The Supreme Court's ultimate analysis was that private enforcement of the public trust doctrine can be used to protect wildlife, and was not limited to waterways and water resources, as the operators argued. Therefore, the appellate court held that the birds were protected by the public trust doctrine. The question following then involved who could be sued. The appellate court then ruled that a claim for breach of the public trust must be brought against responsible public agencies, and not against private defendants. The court said, "The defect in the present complaint is not that it seeks to enforce the public trust, but that it is brought against the wrong parties." The court first looked at common law trust principals by analogy. "Where a trustee cannot or will not enforce a valid cause of action that the trustee ought to bring against a third person, a trust beneficiary may seek judicial compulsion against the trustee." *Saks v. Damon Raike& Co.*[27] The court rejected the attempt in this case to create a private cause of action against the Operators for enforcement of the public trust doctrine and limited private enforcement to suits brought against public agencies. Finally, the court analyzed the resulting policy implications in support of its decision not to extend enforcement of the doctrine to private defendants. It speculated that the impacts of expanding the public trust doctrine would be enormous, leading to duplication of efforts by agencies and the courts, inconsistent standards and conditions being applied to decision-making, improper assumption of administrative functions and interference with administrative decision-making processes. "The courts are available to review the responses of those agencies, but they are not available to supersede their role in the regulatory process."The overall ruling appears to both solidify the public trust doctrine's applicability to the protection of wildlife as a trust resource, and establishes a limitation on the public trust doctrine so that it can only be invoked to sue public agencies charged with oversight of land use projects. In general, the opinion has the potential to spread the scope of litigation challenges to land use and agency regulatory decisions. Certainly, the decision puts big targets on the backs of the public agencies responsible for permitting projects that harm wildlife or other public trust protected resources.

Finally, from the foregoing, we note that PTD is anchored on the principle that wildlife are owned by no one, but are to be held "in trust" for the benefit of all the people by the government (Bean and Rowland, 1997). As trustee, the government has no power to delegate its trust duties and no freedom to transfer trust ownership or management of assets to private concerns (Horner, 2001). The government has the affirmative duty to fulfil trust responsibilities (Horner, 2000) that is, it cannot sit by idly while trust resources are depleted or wasted (Pont de Nemovrs & Co., 2010). The public trust doctrine may therefore, prove useful for protecting and managing wildlife, natural and cultural resources both within national jurisdictions and in supranational forums. The doctrine facilitates the weighing of legitimate public and private as well as conservational and development interests to create a well-balanced plan for resources protection and use. The potential of public trust doctrine if broadened and applied in developing countries will no doubt be a more active and effective weapon to protect wildlife and endangered species.

[27] (1992) 7 Cal. App. 4th 419.

6. The socio-economic, socio-politic and socio-cultural environment in developing countries: Sustainable development and the protection of endangered species

Multifarious human factors drive, influence and affect environmental change at the global, regional national and local levels.[28] Drivers of environmental change vary in nature and scope but can be broadly grouped together as demographic; economic, social, political, science and technology, conflict, and governance. Critical socioeconomic conditions include poverty and health. Socio-political factors come in the nature of policy and institutions, although most often thought of as the response to mitigate such change, may in most cases impact directly on human vulnerability. There are therefore, links between the different drivers –socio-economic, socio-political and socio-cultural issues. These act in concert to determine the effectiveness or otherwise of concepts like sustainable development and the protection of endangered species fauna in the wild. They act in concert to maximize negative impacts and sometimes produce positive change.[29] Developing countries are at the centre of sustainable development- in rural and urban areas. Although still largely undeveloped, developing countries have been experiencing substantial transformation with regards to socio-economic, socio-political and socio-cultural development, with positive and negative implications for the environment and development. The challenge is not to arrest development but to use the available resources in a more productive and efficient manner, ensuring better and more equitable returns to people while at the same time lessening pressure on the environment, which in turn reduces the rate of species and wildlife extinction.

Changing demography and particularly the population growth, a high rate of urbanization, and a faster rate of population in relation to economic growth are major drivers of unsustainable practices, and species fauna and flora in the wild extinction in developing countries. These have significant impacts on the natural resource base. Due to this, it is imperative that the socio-economic, socio-political and socio-cultural factors are addressed to reduce environmental degradation which impacts negatively on the principles of sustainable development and protection of endangered species fauna and flora in the wild. Each year, the number of people increase, but the amount of natural resources with which to sustain the population, to improve the quality of lives and to eliminate poverty remains finite, increasing the challenge of sustainable development. Demographic change is a major factor of land – cover change, thus change and destruction of wildlife and species fauna and flora habitat. Because, as new lands are opened for agricultural settlement, and infrastructural development, and mining, habitats and species fauna and flora in the wild are destroyed, threatened, endangered or made extinct. The rate of urbanization places a strain on infrastructure and other services and the national governments of developing countries are not coping with this development. There is therefore, a growing and urgent need for integrated approaches to environmental planning and management.

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28 United Nations Environment Programme and Cleveland, C. (2010), "Environmental Change and Socioeconomic Factors in Africa" in *Encyclopaedia of Earth*, Cleveland, C. J. (ed.), Washington, D.C., Environmental Information Coalition, National Council for Science and the Environment, first published in the Encyclopaedia of Earth May 31, 2010,last revised date May 31, 2010, [www document] available URL http://www.eoearth.org/article/environmental_Change_and_Socioeconomic_Factors_in_African

29 Ibid.

In the absence of alternative livelihood opportunities and strategic management of the environment, this rapid population growth and urbanization has resulted in environmental degradation and resources depletion. Between 1990 and 2000, Africa alone lost 52 million hectares forest: this amounts to a decrease of 0.8 percent annually and 56 per cent of the global total. It is estimated that 60 percent of the tropical forest areas cleared in Africa as a whole between 1990 and 2000 were converted to permanent agricultural smallholdings. However, migration to urban areas is not inevitably destructive, nor does it necessarily lead to the formation or growth of dangerous and unhealthy slum area. It is important to recognize the valuable role urbanization can play in stimulating the economy. The challenge lies in reversing the current pattern and enhancing the efficiency of the value derived from natural resources use.[30]

Knowledge and access to information are essential for effective environmental management and have significant impacts on the economy and the livelihood choices people make. Indigenous knowledge systems based on centuries of observation and continually developed in response to changing social and environmental conditions are an important resource for many rural people. This knowledge base offers opportunities not only for conservation but also for the protection of endangered species fauna in the wild and commercialization of wild resources, as demonstrated, for example, by the increasing markets for non-timber forest products (NTFPs), such as *prunusafricana, Harpagophytumprocumbens* (devil's claw) and Kigeliaafricana (African sausage tree). Trade in devil's claw, a traditional medicinal plant, supports a US$ 100 million industry, but most benefits go to processing and transformation actors along the marketing chain and only a very low proportion goes to domestic producers. This pattern will continue as long as there is low investment in improving community skills and access to relevant information. Literacy and the level of formal education is also an important factor affecting the kind of information people have access to, and thus the range of opportunities at their disposal.

In the absence of improved access to formal education, a considerable reduction in illiteracy rates, and accessible environment-related and functional education, opportunities available to most people will continue to be limited, with possible negative influence on the environment. Choices made in one sector may have a direct bearing on the environment. Pervasive poverty and social inequalities remain major constraints to sustainable development and species protection in developing countries. Poverty is a cause and an effect of environmental degradation. The equitable, efficient and productive use of natural resources offers important opportunities for sustainable livelihoods which can contribute to reducing poverty.[31]

Poverty is multidimensional: it is more than just the lack of access to financial resources – even though income is the most commonly used indicator of poverty – and material resources. It includes the lack of capabilities that enable a person to make choices to live a life that she or he values. This includes access to income, health, education, empowerment and social inclusion, and human rights. Poverty may be synonymous with powerlessness, with a lack of access to information, institution and voice. There is considerable variation among poor people and the extent to which they are disempowered. This is affected by various factors including gender, location (urban or rural), culture and ethnicity. Global inequity,

30 United Nations Environment Programme and Cleveland, C. (2010), *ibid*.
31 Ibid.

particularly in-trade, continues to be a major contributor to continued poverty in developing countries.[32] In much of developing countries poverty is particularly severe.

Across Africa for example poverty is more prevalent in rural than in urban areas. The link between environmental resources and the livelihoods of rural people is widely acknowledged. Rural people rely on the environment for a range of goods and services. These services including provisioning (food, medicines and energy) and regulating services (such as water purification). Environmental goods may have important cultural and aesthetic values. Natural resources and species fauna in the wild may serve as important safety nets during periods of stress. However, poor people are also more vulnerable to environmental disasters and risks, such as insect-borne diseases, including malaria and unsafe water. Social and economic shocks from conflict, ill health, falling market prices and so on, exacerbate overall vulnerability.

Poverty may contribute to unsustainable resources use. Policies and institutions are major factors which limit the value poor people can obtain from a resource, effectively forcing them to harvest or use more in order to meet basic needs. Policies and laws that restrict use to subsistence deny poor people access to value-adding activities which could generate significantly more income. Bureaucratic measures and inefficient economies may limit access to markets, financial resources and other support. Moving towards a regime which acknowledges natural resources as assets of poor people and which empowers people to use these resources efficiently and productively can have positive impacts on equitable growth and for sustainable development.[33]

7. Developing countries, sustainable development and adverse governmental policies affecting habitat and protection of endangered species

Habitat and protection of endangered species fauna and flora in the wild is driven by local, regional, and global responses by the governments at all levels. Responses in the nature of policies need to acknowledge multiple stakeholders with different need, and impacts either positively or negatively on the ecosystem. The idea of governmental policies in the area of habitat and protection of endangered species fauna in the wild is to address the issues identified. Government policies designed to address habitat and protection of endangered species fauna in the wild will not be sustainable or sufficient unless relevant direct and indirect drivers of change are addressed. Progress in reducing habitat loss and protection of endangered species fauna in the wild will come through greater coherence and synergies among sectoral responses and through more systematic consideration of trade-offs among ecosystem services or between biodiversity conservation and other needs of society (Millennium Ecosystem Assessment, 2005). Some governmental policies affecting habitat and protection of endangered species fauna in the wild are localized and usually come in the nature of laws and policies to control overexploitation of species fauna and flora in the wild. Others are global, such as CITES, CBD and such. They operate at various scales with local, national and global impacts. The essence of all

32 Ibid.
33 UNEP, et al., ibid

the policies is designed to address the direct drivers of habitat loss and species extinction – such as unsustainable patterns of consumption, demographic change and globalization.

At the local and regional levels, policies in the nature of responses tend to promote both local biodiversity and human well-being by acting on the synergies between maintenance of local biodiversity and provision of key ecosystem services which are vital to habitat and protection of endangered species fauna in the wild. Policies articulated at local levels most often reflecting the thinking of the global community – effective efforts for conservation and development in developing countries, through shared goals or programs in the nature of conventions, treaties, agreements and protocols and strategies that promote protection of habitat and endangered species fauna in the wild. Governmental policies affecting habitat and protection of endangered species fauna in the wild places human well-being as the central focus, recognizing that people make decisions concerning ecosystems based on a range of values related to well-being, including the use and non-use values of biodiversity and ecosystems. The well-being of local people dominates the policies which mostly relate to protected areas, governance, wild species management and local capture of benefits.

Governance approaches to support habitat and protection of endangered species fauna in the wild, biodiversity conservation and sustainable use are required at all levels, with supportive laws and policies developed by central governments providing the security of tenure and authority essential for sustainable management policies at lower levels. The principle that biodiversity should be managed at the lowest appropriate level has led to decentralization in many parts of the world, with variable results. The key to success is strong institutions at all levels, with security of tenure and authority at the lower level essential to providing incentives for sustainable management. At the same time that management policies of some ecosystem services is being devolved to lower levels, management approaches are also evolving to deal with large-scale processes with many stakeholders. Problems such as regional water scarcity, habitat and protection of endangered species fauna in the wild and conservation of large ecosystem require large-scale management structures. For example, most of the major rivers in developing countries flow across international borders, so international water co-management organizations are being designed to share the management of riparian resources and ensure water security for all members. However, political instability in one state may negatively affect others, and power among stakeholders is likely to be uneven.

Legal systems in developing countries are multi-layered and in many developing countries, local practices or informal institutions may be much stronger than the law on paper. Important customs relate to the local norms and traditions of managing property rights and the ecosystems around them. Since these are embedded in the local societies, changing these customs and customary rights through external incentive and disincentive schemes is very difficult unless the incentives are very carefully designed. Local knowledge, integrated with other scientific knowledge, becomes absolutely critical for addressing ways of managing local ecosystems. More effort is needed in integrating biodiversity conservation and sustainable use activities within larger macroeconomic decision-making frameworks. New poverty reduction strategies have been developed in recent years covering a wide range of policies and different scales and actors. However, the integration or mainstreaming of ecosystems and ecosystem services is largely ignored. The focus of such strategies is generally on institutional and macroeconomic stability, the generation of sectoral growth, and

the reduction of the number of people living on less than $1 a day in poor countries. It is well documented that many of the structural adjustment programs of the mid-to late 1980s caused deterioration in ecosystem services and a deepening of poverty in many developing countries.[34]

International cooperation through multilateral environmental agreements requires increased commitment to implementation of policies and activities that effectively conserve biodiversity and promote sustainable use of biological resources. Numerous multilateral environmental agreements have now been established that contribute to conserving biodiversity and protecting habitat and endangered species. The Convention on Biological Diversity is the most comprehensive, but numerous others are also relevant, including the World Heritage Convention, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Ramsar Convention on Wetlands, the Convention on Migratory Species, the U.N. Convention to Combat Desertification, the U.N. Framework Convention on Climate Change, and numerous regional agreements. Their impacts at policy and practical levels depend on the will of the contracting parties.[35]

Although, habitat loss and endangered species extinction are a recognized global problem, most direct actions to halt or reduce loss need to be taken locally or nationally. Indirect drivers like globalization and international decisions on trade and economics often have a negative effect on them and should be addressed at the international level, but the proximate responsibility to detect and act directly on habitat loss and species extinction is at the local and national level. For threatened endemic species or ecosystems limited to an area within a single country or local administrative unit, the relevant agencies should give high priority to these species or ecosystems, with appropriate support from global, regional, or national support systems.

Government policies do not work in a vacuum. A variety of enabling conditions – a combination of instrumental freedoms and institutional frameworks – play critical roles in determining the success or failure of a government policy. The success or failure of many policies is largely influenced by the various institutional frameworks in place in a country.

Ecosystem restoration activities are now common in many countries and include actions to restore almost all types of ecosystems, including wetlands, forest, grasslands, estuaries, coral reefs, and mangroves. Restoration will become an increasingly important policies response as more ecosystems become degraded and as demands for their services continue to grow. Ecosystem restoration, however is generally far more

34 Integration of biodiversity conservation strategies and responses within broader development planning frameworks. For example, protected areas, restoration ecology; and markets for ecosystem services will have higher chances of success if these responses are reflected in the national development strategies or in poverty reduction strategies, in the case of many developing countries. In this manner, the costs and benefits of these conservation strategies and their contribution to human development are explicitly recognized in the public Expenditure Review and resources for the implementation of the responses can be set aside in national Mid-Term Budgetary Frameworks.

35 Increased coordination among multilateral environmental agreements and between environmental agreements and other international economic and social institutions. International agreements are indispensable for addressing ecosystem-related concerns that span national boundaries, but numerous obstacles weaken their current effectiveness. The limited, focused nature of the goals and mechanism included in most bilateral and multilateral environmental treaties does not address the broader issue of ecosystem services and human well-being. Steps are now being taken to increase coordination among these treaties, and this could help broaden the focus of the array of instrument. However, coordination is also needed between the multilateral environmental agreements and the more politically powerful international legal institutions, such as economic and trade agreements, to ensure that they are not acting at cross-purpose.

expensive an option than protecting the original ecosystem, and it is rare that all the habitat, species biodiversity and services of a system can be restored.[36] Rather than the "win-win" outcomes promoted (or assumed) by many practitioners of integrated conservation and development projects, conflict is more often the norm, and trade-offs between conservation and development need to be acknowledged. Identifying and then negotiating trade-offs is complex, involving different policy options, different priorities for conservation and development and different stakeholders. In the case of biodiversity and species conservation, the challenge is in negotiating these trade-offs, determining levels of acceptable biodiversity loss and species extinction and encouraging stakeholder participation. Where trade-offs must be made, decision-makers must consider and make explicit the consequences of all options. Better trade-offs from policies that remove perverse incentives or create markets for biodiversity and species protection can achieve a given level of biodiversity and species protection (regionally) at lower cost. The "ecosystem approaches" as developed by the CBD and others provide principles for integration across scales and across different responses. Central to the rationale is that the full range of measure is applied in a continuum from strictly protected to human-made ecosystems and that integration can be achieved through both spatial and temporal separation across the landscape, as well as through integration within a site. While some effective approaches will not require quantification of biodiversity gains, quantifying marginal gains and losses from different sources can strengthen such integration and enable one strategy to complement another in a targeted, strategic way.

Society may receive greater net benefits when opportunity costs of conservation in a particular location are adjusted to reflect positive gains from ecosystem services provided and when the setting of biodiversity targets takes all land and water use contributions into account. Debates about the relative value of formal protected areas versus lands that are more intensely used by people but that conserve at least some components of biodiversity and species are more constructive when conservation is seen as a continuum of possibilities. Weaknesses of both ends of the spectrum can be overcome by linking them in integrated strategies.

Finally, government policies must involve the private sector in environmental management. The private sector can make significant contributions to habitat, species fauna and biodiversity conservation. Some parts of the private sector are showing greater willingness to contribute to biodiversity conservation and sustainable use due to the influence of shareholders, customers, and government regulation. Showing greater corporate social responsibility, many companies are now preparing their own biodiversity action plans, managing their own landholdings in ways that are more compatible with biodiversity conservation, supporting certification schemes that promote more sustainable use, working with multiple stakeholders, and accepting their responsibility for addressing biodiversity issues in their operations. Influence of shareholders or customers is limited in cases where the company is not publicly listed or is government-owned.

Further developments are likely to focus on two main areas. First, in addition to assessing the impact of companies on biodiversity, important though this is, increasing emphasis will be given to ecosystem services and how companies rely on them. This will require development of mechanisms for companies to understand

[36] Ibid.

their risk exposure and manage those risks. Second, greater collaboration is likely to take place between NGOs and business in order to more fully explore ways to reduce harmful trade-offs and identify positive synergies that could lead to more effective sustainable management practices.

8. Protection of endangered species in developing countries and responsibilities to future generations

The earth, our planet is in trouble! Daily we hear of yet another problem affecting the environment – pollution, acid rain, climate change, the destruction of rainforests and other wild habitats, the decline and extinction of thousands of species of animals and plants… the list of environmental woes is endless. These threats not only exist, they are caused by human beings. The future of our planet and that of future generations lies critically at risk, except we devise means and ways of solving the problems we have created for ourselves. We must all do something to reverse the ugly trend and slow down and not leave the problem-solving entirely to the experts. We all have a responsibility to protect our environment. Such responsibility is not only to the present, but to future generations yet unborn. We are all stakeholders. We must learn to live in a sustainable manner, learn to use our natural resources which include, forests, wildlife species fauna and flora, farmland, air, freshwater, natural resources without damaging them. We must keep the planet earth in a good condition so that future generations, will enjoy the same natural resources that we enjoy today (Factsheet, 2011).

Species loss is a serious environmental problem. According to Carter Roberts:[37]

> *If people want to live in a world that is more than pigeons, rats, cockroaches and starlings, we need to do more than set aside land… we have to protect endangered species before they are destroyed.*

The Dalai Lama[38] has also added a voice when he said:

> *The exploration of space takes place at the same time as the Earth's own oceans, seas, and fresh water areas grow increasingly polluted. Many of the Earth's habitats, animals, plants, insects and even micro-organisms that we know as rare may not be known at all by future generations. We have the capability and the responsibility. We must act before it is too late.*

Apart from the fact that every living organism has the right to live, plants and animals hold medicinal, agricultural, ecological, commercial and aesthetic/recreational value. Endangered species must be protected and saved so that future generations can experience their presence and value. Groundbreaking statistical analysis conducted by *Nature* journal demonstrates that the preservation of biodiversity – both the number and type of species – is needed to maintain ecological balance and "services". The concern about losing numbers of species versus types of species has been an area of scientific controversy for over a decade.

37 Vice President, of the Nature Conservancy.
38 His Holiness, the 14th Dalai Lama Tenzin Cayatso, spiritual leader of Tibet born 6, July 1935to a farming family.

What this really means is that the extinction of species from our planet will change the way pests and diseases are controlled, organic wastes are broken down and recycled, food is produced by ecosystems, and water is purified.

According to Diane S. Srivastava[39]:

> *Until recently, scientists knew a lot about the causes of extinctions, but surprisingly little about their consequences. Our study shows that biodiversity matters. Ecosystems with more species function better, that is, they are more efficient in moving energy and matter. In practical terms, this means that diverse ecosystems are better at, for example, controlling pests, breaking down organic matter, and absorbing carbon dioxide, a greenhouse gas.*

About one-third to one-half of all the species on the planet are expected to be lost in the next 100 years and currently species are going extinct at thousands of times faster than they have historically. The losses are due to the cutting down of rainforests, development, pollution, and the introduction of exotic species that take over the niches of indigenous species.An endangered species is any animal or plant species whose very survival is threatened to the point of extinction. Once extinct, a species is no longer found anywhere on Earth and there is no chance of its revival. The extinction of species is not a new phenomenon. Natural extinction of species has been occurring since life started on earth. But it is the rapid extinction which is a cause of concern.Due to destructive human activity, the diversity of all life on earth has decreased by over 30% in the past thirty-five years. Species are becoming extinct at an alarming rate. While species have evolved and become extinct on a regular basis for the last several hundred million years, the number of species becoming extinct since the Industrial Revolution has no precedent in biological history. If this rate of extinction continues, or accelerates as now seems to be the case, the number of species becoming extinct in the next decade could number in the millions.

The four steps in the journey of species are:

1) **Vulnerable Species:** A species particularly at risk because of low or declining number or small range, but not a threatened species.
2) **Threatened Species:** A species whose population is not yet low enough to be in immediate danger of extinction, but which certainly faces serious problems. If the problems affecting these species are not resolved, it is probable that the species will become endangered. The eastern indigo snake and the red kangaroo are examples of threatened species.
3) **Endangered Species:** a specie, plant or animal, that is in immediate danger of becoming extinct. Its numbers are usually low, and it needs protection in order to survive. The Siberian tiger, the southern sea otter, the snow leopard, the green pitcher plant, and thousands of other plants and animals are endangered worldwide.
4) **Extinct Species:** an extinct species is one that is no longer living. The passenger pigeon, the dodo, and the Stegosaurus are examples of extinct species. These animals no longer exist on the earth.

[39] Professor with the Biodiversity Research Centre in the Department of Zoology at the University of British Columbia, see Diane (2010).

One of the major responses to our responsibility towards the future generations is to protect endangered species through national laws and global conventions and treaties. CITES and CBD stand out on this score.

Sustainable development, that which meets the needs of the present without compromising the needs of future generations is the key to reconciling the conflict between economic and environmental goals. Short-term market values of products based on biological resources need to be measured against accurate assessments of the longer-term value of renewable biological resources, and of the natural habitats that produce them. Care must be taken to preserve and replenish the raw materials of a biologically diverse and healthy environment.[40] Traditionally, wealth has been created in the developed countries by exploiting the resources of the natural environment and transforming them into products used and desired by human beings. This has often been done with little regard to the consequences and has resulted in widespread environmental damage and destruction. Although the developed countries generally profess support for environmental conservation and protection, they still consume most of the world's natural resources and seek to exploit the resources of the developing countries of the South.[41]The primary goal of the developing countries is economic development and poverty alleviation. Although recognizing the importance of environmental protection, they generally give priority to income-generating activities, feeling that the developed countries should contribute to the cost of sustainable development by providing resources and technology needed for environmentally friendly development. Developing countries also contend that they should share financially the results of genetic engineering using their biological resources. So the basis for the political debate between North and South is largely economic.[42]In Agenda 21 (chapter 33, section IV), developed countries reaffirmed their commitment to reaching, as soon as possible, the United Nations target of 0.7 percent of gross national product (GNP) annually for official development assistance (ODA). The Commission on Sustainable Development is monitoring progress towards achieving this target. According to the figures available in the 1996 Human Development Report of the UN Development Programme (UNDP), the total world ODA in 1994 was $59.16 billion, or a average of .3 percent of world GNP. Unfortunately the overall level of ODA appears to be declining and is not expected to increase in the near future.[43]

The Global Environment Facility (GEF) was established in 1991 by donor countries through a World Bank resolution. Located in Washington, D.C., the GEF, which began as a pilot programme, was restructured in 1994 to provide grant and concessional funding for action to improve the global environment in the areas of climate change, biological diversity, international waters, and ozone layer depletion. On an interim basis, the GEF operates the financial mechanisms for the United Nations Framework Convention on Climate Change and the Convention on Biodiversity. It was estimated that the GEF's implementing agencies (UN Development Programme, the UN Environment Programme and the World Bank) would be able to undertake GEF-related projects amounting to $340 to $415 million in 1997. Funds are contributed to the GEF by both donor and recipient Governments.

40 Ibid.
41 Ibid.
42 Ibid.
43 Earth Summit + 5, ibid.

9. Conclusion

This Article, "Sustainable Development and Protection of Endangered Species Fauna and Flora in the Wild in Developing Countries" has shown that it is a complex and wide-ranging area of environmental law that employs a broad range of different approaches to protection. The obligations and responsibilities placed on parties to treaties and conventions, particularly those of the developing countries are often far-reaching and have implications for economic-based activities, land-use policies (which includes pastoral, agricultural or industrial users) as well as for larger development projects and public works. Though it is accepted universally, that international co-operation is the basis of treaty-making and this legal regime and protective approaches to migratory species and trade-based controls rely on it, much of the implementation of these treaties implicates national, regional and local governments. It requires them to undertake measures ranging from establishing protected areas and buffer zones, conducting inventories of wildlife and their conservation status, ensuring healthy eco-systems and finding a balance between recreational 'exploitation' of wildlife and their habitats and their conservation. These places a heavy task on the states, particularly the developing countries which lack the human and financial resources to meet it and international aid in capacity-building and financing wild-life protection in developing countries is essential for effective implementation of existing international and natural laws on wildlife protection. It is also important to ensure that countries put in place the necessary domestic legislation and regulations for effective implementation of wildlife treaties.

The development of regional treaties and conventions, similar, for example to the model of the Berne Convention should be encouraged as this can ensure much better regional protection for wildlife. International wildlife law has become an important, permanent and complex area of legal protection. Individual countries' wildlife laws are however prone to the politics of the time. The future of wildlife laws and the protection they provide depends upon the popular, financial, legal and political support that can be mustered at the international, national and local levels. It is therefore, of paramount interest that the international legal protection afforded wildlife and habitat described in this Article will need to be applied, expanded and integrated into national laws. There is urgent need for a more holistic view of wildlife problems in international and national laws and policies. Greater interdisciplinary knowledge about nature and the environment is essential, as will consensus on the goals that the international comity and national governments wants to achieve in the protection of wildlife fauna and flora. Private industries should be encouraged to respond positively to public support for wildlife protection. Human population growth, human-wildlife conflict, rapid development of sensitive lands such as coastal and riparian areas, and other complex factors such as the removal of international trade barriers, all are likely to impact on the effectiveness of existing or proposed international wildlife treaties and wildlife-related laws. As habitat loss is the leading cause of decline in plant and animal diversity and populations, land development of all kinds must have to involve careful consideration of the impact on flora and fauna. Creative incentives to private landowners to protect habitat and wildlife may need to be encouraged and implemented at the national levels, through such actions as conservation reserve programmes. The economic value of wildlife and biodiversity must be recognized in some form as wildlife and nature-related recreation becomes increasingly important and more money is spent on these pastimes by national governments. For effective

implementation of both international and national wildlife laws, other challenging environmental issues will need to be dealt with. Scientists warn that global warming, ozone depletion and climate induced changes in habitat will likely cause problems for wildlife that are not yet contemplated, much less understood. New creative and proactive solutions to enormous and difficult issues for wildlife protection and management must be tackled. International and national wildlife laws will continue to play an important role in dealing with those issues. As stated earlier in this Article, international trade in wildlife is a multibillion – dollar industry which in some cases has resulted in species extinction. It was to address this problem that the international comity of nations under the auspices of the United Nations negotiated and created on international treaty- the Convention on International Trade in Endangered Species of Wild Fauna and Flora that took effect in 1975. The parties to the convention, including developing countries also has domestic laws anchoring on the convention. These domestic laws protect species at the national levels, though the protections provided by the Convention (CITES) can differ, for example, the United States Endangered Species Act and related federal wildlife legislations afford more stringent protections to species than the Convention. Implementation of CITES has become increasingly complex. The point however,is that the CITES remain controversial.

First, permitting and enforcement tasks related to the import and export of protected species are more difficult, in part because workload has increased due to the sheer number of species now protected by the Convention and the demand for such species. Permitting and enforcement tasks are also complicated by the evolving nature of the wildlife trade and the various stipulations attached to the use of protected species. For example, a significant portion of trade is now in wildlife parts and products rather than whole plants or animals that are much more difficult to detect and identify. Inspectors must be familiar with numerous wildlife products such as plant pollen, roots, and seeds; animal hides and wildlife tissue; all of which may be subject to different levels of protection. Second, the criteria for identifying species for protection under the Convention have become more scientific. In the past, some species were protected on the basis of very little field-collected data and, instead, because scientists suspected-rather than deduced-that a particular species was in decline. Today, the Convention places more emphasis on obtaining biological evidence of decline when identifying new species for protection. Lastly, some proposals for species protection are broadening the historical reach of the Convention into areas that generate considerable controversy, such as commercial fisheries. Such proposals have spurred acrimonious debate among member countries over the extent to which the Convention should intervene in regulating trade in species that, in some cases are managed by other international or regional organizations. As a way forward, the Convention membership is taking steps to proactively cooperate with other resource management and oversight organizations.

Some regulated entities and Convention member countries believe that “stricter domestic measures”, such as those imposed under Endangered Species Act, unnecessarily restrict U.S. citizens from participating in trade allowed by other member countries and may undermine some species conservation efforts. For example, some exporting countries rely on revenue from trade in protected species to generate funds for supporting conservation efforts such as protecting species from poaching. In contrast, some species advocates believe that all individuals of any species that has been identified as a risk for extinction should be protected and that the additional protections provided by the Endangered Species Act are necessary and

appropriate. Many environmental investigation bodies and international experts are of the opinion 'that the presence of and brazen trade in fake and real endangered species products' is deeply alarming and that more rigorous enforcement of international treaties and conventions against trafficking in endangered species should be adopted.[44] Law is but one of the tools to protect wildlife from overexploitation and depletion. Sanctions (be it civil or criminal) may not provide enough deterrence without an increase in public enlightenment and advocacy. Enforcement by authorities, particularly in the developing countries will go a long way in deterring poachers and illicit traders who will have trouble finding markets. Despite the international and national wildlife laws that are in place, people, mostly developing countries do not think in terms of wildlife protection or conservation of biodiversity, because they do not understand the gravity of the situation. Uppermost in their minds, is how to use wildlife for their own purposes, such as for business or trade, food, medicine, pleasure, or a symbol of affluence and economic prosperity. A comment credited to a Tibetan trader seems to say much about the thinking and activity of those who actually carry out wildlife trafficking or consume wild products:

> *If you live next to the mountain you eat the mountain… if you live next to the river you eat from the river. We are nomads in Tibet. We are dependent on the animals* (Sharma, 2005).

Admittedly, changing attitudes is an uphill task, but raising awareness and publicizing the impacts and fatal consequence of the disappearance of endangered species upon world's ecosystems and biodiversity needs to happen. Only through an alteration of attitudes can the deep impact on the psyches of consumers and traders of endangered species occur that is necessary for the protection of these species. Dissemination of information, increased awareness, and educational programs are the ground tools that the international and national governments can use to initiate endangered species protection under their various programs. There is a definite and acute need to re-educate the people who are involved with wildlife and those who find using products derived from endangered species to be a sign of prosperity and a status symbol in society. Involving international agencies in this effort is crucial because they are not bound by any cultural constraints. Attempts by local officials have limitations. Local non-governmental organizations and local governments might be restrained by local politics and cultural practices. More publicity and comparisons with other countries would open local people's eyes as to what they are doing to their natural resources. Campaigns to educate and raise awareness among students and the youth should begin at the earliest stages of their lives, when new ideas of conservation and preservation can still influence their minds.

In terms of political objectives and international obligations, the developing countries governments have declared their support under Agenda 21 to be to protect, preserve and sustainably use their biological diversity. This policy has initiated development of alternatives and stricter bans under the law, and concerted efforts to preserve and conserve endangered species. These efforts have included new initiatives, such as the creation and declaration of new natural reserves, research and advanced technical development in preserving and conserving habitats, and programs like captive breeding, conservation banks, bioengineering, data collection, education and publication. Mindful of the fact that the developing countries harbor a spectrum of biological diversity, including many endangered species, continued efforts must be

[44] See, Sharma (2004).

made by rich countries to assist them at the social, cultural, administrative, and law enforcement levels in order to control and abate illicit trade and unsustainable consumption of endangered species before more are lost forever.

Another worrisome challenge is that the developing countries wildlife laws enforcement programs are plagued by weak leadership and oversight that has contributed to their wildlife protection laws and programs being a headless horseman. Politics, poverty, and corruption still impedes enforcements and the much touted reforms have not yet taken hold. Criminal enforcement of wildlife protection laws in most developing countries are at very low level, with very few exceptions like India and Kenya. Social change is a necessity in any society. In this regard, it might be necessary and worthy to employ the use of Public Interest Litigation (as in India) to protect wildlife. The prevailing formal legal system mostly in developing countries is no longer just re-oriented. In the circumstances, social reform and wildlife protection could be much better attained through Public Interest Litigation or Social Action Litigation. There should be shift from legal centralism to legal pluralism because social conduct is regulated by the interaction of normative orders, notion of popular justice, community justice and distributive justice. These should be institutionalized outside the sphere of technicalities of the formal legal systems.

In conclusion, the point must be made that the issue of what benefits are to be derived from wildlife protection and conservation by developing countries remains unresolved. The state-resource relationship introduced during colonialism which resulted in the stripping of local communities of any powers of management or control of their natural resources, particularly wildlife, also alienates people from conservation. The state has retained closed control of wildlife resources and has not always been sensitive to the social and economic needs of sustainable utilization at the local levels and for the most part follows the colonial patterns of mining natural resources to maintain state coffers and benefit the powerful individuals. The failure of the colonialists to appreciate the nature of natives' traditional rights led to undue disregard for those rights and this has affected the conceptions of property by the natives to this day. Cronon, for instance has argued that ownership is a complex social institution that varies widely between cultures and therefore only makes sense if the people with whom the property rights holder lives recognize that ownership can vest on that person the rights to impose sanctions against the violation of those rights by anyone else. Since different groups may permit different bundles of rights over the same object, to define property rights is to represent boundaries articulating a set of conscious ecological boundaries between people and things. This delineation of rights underlines what it is that a particular community values and distinguishes the fishermen, pastoralists and agriculturists (Cronon, 1983). Although the international legal regime for the protection of endangered species in the wild is intended to promote and encourage sustainable wildlife management and protection, the laws and demands by the developed countries on the developing countries are overly aggressive. Tribal and indigenous rights are only paid lip service. For example, in June 2011, the head of India's Wildlife Conservation Society was fired for being part of a government committee that backed tribal rights over forest lands under the Indian Forest Rights Act. The Indian Environment Minister, JairamRanesh, reacting to the Wildlife Conservation Society move to throw out Chellam said:

> *It is sad that he was penalized for being pro-tribal and pro-people. It shows how anti-democratic some of the self-styled champions of transparency really are.*[45]

This Article strongly submits that the international community should view the developing countries differently in the quest to protect wildlife. The laws should be implemented in such a way as to recognize the fact that the developing countries and their tribal entities depend on the forests and wildlife for their livelihood. This should not be denied them; most of the developed countries with cordoned off forests have no wildlife, therefore, it is surprising to hear conservation groups from countries without wildlife advising countries with wildlife on tribal and indigenous rights.

This Article concludes by submitting that tribal and indigenous rights and claims must be recognized effectually and considered holistically in conservation policy making processes. They must be incorporated into the conservation activities. It is vital that conservationists understand the structures and customs of the local people in all social, cultural and historical aspects.

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