Biodiversity Journal, 2022,13 (1): 145–154 https://doi.org/10.31396/Biodiv.Jour.2022.13.1.145.154

Factors of Biodiversity Loss and Conservation difficulties and opportunities in Ethiopia: systematic review

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ABSTRACT Though there is plenty of theoretical evidence supporting the economic and social reasons of biodiversity loss, empirical evidence for the majority of these links is sparse, if not non-existent. The loss of habitats, the introduction of foreign species, over-harvesting of biodiversity resources, and species homogeneity in agriculture are all important biological drivers for the loss of biological diversity. All of these factors have one thing in common: they are all human-driven. More research is needed in this area. It is also debatable and questioned if existing biodiversity-conservation strategies provide adequate responses to these core causes of biodiversity loss and are capable of effectively counteracting the loss of biodiversity-related cultural values, biological species, and ecosystems. This review study provides an overview of the economic and societal factors that contribute to biodiversity loss in Ethiopia, as well as prospective opportunities. It also indicates the obstacles and future directions that should be implemented. Only theoretical considerations and overviews of current estimations are used in the analysis. Better promotion of practical conservation methods, community-based management techniques, and sector-based conservation and integration should be applied throughout the entire resource region to scale up biodiversity conservation loss.

KEY WORDS Ethiopia; threat; preservation; biodiversity.

Received 03.09.2021; accepted 30.12.2021; published online 22.03.2022

INTRODUCTION

Ethiopia is one of the world's biodiversity hotspots, and it demands regional and global attention. It features a wide range of environments, from humid forests and large marshes to the Afar Depression's desert. Climate, topography, and vegetation all have a role in this. According to Edwards (1991), Ethiopia is one of the world's twelve recognized ancient countries for crop plant diversities and contains significant reserves of crop genetic diversity, with 11 cultivated crops having their diversity center in the country. The occurrence of a considerable number of endemic species is due to the wide and unique circumstances found in the country's highlands. Ethiopia's flora is extremely rich, having an estimated 6,500 to 7,000 species of higher plants, with about 15% of them being unique. Ethiopia is reported to be the world's fifth largest floral country in tropical Africa. The country's faunistic diversity is extremely impressive. The larger mammals are mostly found along the country's south and southwest borders, as well as in nearby locations. Many endemic mammals, like the Walia Ibex, Semien Fox, and Gelada Baboon, can be found in the northern mountain massifs. Ethiopia is home to 277 mammalian species, 861 bird species, 201 reptile species (including over 87 snakes, 101 lizards, and 13 tortoise and turtle species), 145 freshwater fish species (including over 87 species from the Baro River and 16 from Lake Abaya), 324 butterflies, and 63 amphibian species.

Ethiopia is home to a total of 31 indigenous animal species. The Walia Ibex (*Capra walle*), Gelada Baboon (*Theropithecus gelads*), Starck's Hare (*Lepus starcki*), Mountain Nyala (*Tragelaphus buxtoni*), and Ethiopian Wolf (*Canis simensis*) are among the larger mammals, while the rest (83.9%) are smaller mammals, including 2, 9 and 15 species of bats, insectivores, and rodents, respectively. The Black Rhinoceros *Diceros bicornis*, Grevy's Zebra *Equus grevyi*, African Wild Ass *Equus africanus*, Walia Ibex *Capra walle*, and Ethiopian Wolf *Canis simensis* are among the globally vulnerable mammal species identified in Ethiopia. Ethiopia has about 861 avifauna indigenous species, according to its avifauna. The Ethiopian Wildlife & Natural History Society (EWNHS) has identified 69 Important Bird Areas (IBAs) that are also important for a substantial number of other taxa using scientifically valid quantitative criteria. These include the current protected areas as well as a slew of new ones. Given rising evidence of the importance of biodiversity for supporting ecosystem functioning and services, as well as preventing ecosystems from tipping into undesirable states, increased biodiversity loss during the human-induced effect is particularly concerning (Fisher & Turner, 2008).

The resilience of an ecosystem is maintained by a diversity of functional response mechanisms to environmental variation among species. As a result, ecosystems (both managed and unmanaged) with low levels of response variety within functional groups are more susceptible to perturbations (such as illness) and are more likely to experience catastrophic regime transitions (Brown & McLachlan, 2002).

Currently, the rate of global extinction vastly outpaces the rate of speciation, and as a result, species extinction is the principal driver of changes in global biodiversity: the average rate of extinction. Accelerated species extinction is increasingly likely to jeopardize ecosystems' biotic capacity to continue functioning under novel environmental and biotic conditions (Zomer et al., 2008).

Humans have accelerated the rate of species extinction by 100–1000 times the background rates that were normal throughout Earth's history since the Anthropogenic era began (Mace et al., 2005), resulting in a current world average extinction rate of 100 E/MSY. Approximately 25% of species in well-studied taxonomic groups are currently threatened with extinction (ranging from 12 percent for birds to 52 percent for cycads). Until recently (after 1500), the majority of extinctions happened on maritime islands. However, in the last 20 years, roughly half of all reported extinctions have happened on continents, owing to land-use change, species introductions, and, increasingly, climate change, showing that biodiversity is now threatened globally. During this century, the average worldwide extinction rate is expected to grow by a factor of ten, to 1000–10 000 E/MSY (Costanza et al., 1997).

Only lately has the importance of biodiversity management been recognized. Since his inception as *Homo sapiens*, humanity has relied on natural resources. Human knowledge and technology have advanced in leaps and bounds throughout millennia. Although gradual at first (e.g., the transition from the Stone Age to the Iron Age), as time went, the gaps in technical development (revolution) became less and smaller, and the rate of knowledge and skill acquisition increased. Despite this huge accumulation of knowledge and abilities, a simple truth has just recently become apparent, unless natural resources of the world are protected (Girma, 2001). In dealing with the environment, it is necessary to concentrate actions at the local, national, and regional levels in order to get a more realistic global view (Blackwell et al., 1991). The vicious circle of 'poverty-biodiversity-poverty' became identified as the difficulties of developing countries, particularly the least developed countries, of which the majority are in Africa and include Ethiopia, became a subject of debate and study. To put it another way, people in developing nations are more reliant on natural resources, especially renewable resources, than people in rich countries, and this reliance leads to resource depletion and degradation. Environmental degradation and depletion are primarily caused by anthropogenic impacts; however, as human populations grew, there were fewer and fewer natural resources to be utilized on a sustainable basis, necessitating resource overexploitation and mining in order to satisfy more and more people with fewer and fewer resources. The reasons for this situation are numerous and complex (Mekete Belachew, 1996). The review's major purpose is to assemble and construct a situation analysis scenario on biodiversity loss, as well as to recommend current conditions in future conservation with developmental difficulties, as well as to identify bottlenecks and opportunities for biodiversity loss.

MAJOR CAUSES OF BIODIVERSITY LOSS IN ETHIOPIA

Natural land use changes, pollution, variations in atmospheric CO_2 concentrations, changes in the nitrogen cycle and acid rain, climate change, and the introduction of exotic species are all key contributors to biodiversity loss. The fragmentation, threat fragmentation, degradation, or loss of habitats, over-exploitation of natural resources, pollution of air and water (by various activities such as agriculture), the introduction of non-native (alien, or exotic) species, and climate change-induced biodiversity loss are all causes of human-induced biodiversity loss, with these factors inextricably linked with some or all of them. Exotic species are also less of a concern in tropical forests than in temperate places because there is so much diversity in tropical forests that newcomers have a hard time establishing themselves (Shibru Tedla & Kifle Lemma, 1999).

Habitat destruction and fragmentation

Habitat destruction is the process through which natural habitats are rendered incapable of supporting the organisms that inhabit them. The species that formerly used the site are relocated or exterminated as a result of this process, diminishing biodiversity. Human activity mostly destroys habitat for the goal of extracting natural resources for industrial production and urbanization. The primary source of habitat degradation is the removal of habitats for agriculture. Mining, logging, trawling, and urban sprawl are all essential (Bisanda, 2003). Currently, habitat loss is the leading cause of species extinction around the world. It is a natural environmental shift induced by habitat fragmentation, geological processes, and climate change, as well as human actions including invasive species introduction, ecosystem nutrient depletion, and other human activities. Fragmentation is one of the most serious threats to biodiversity and ecosystem services like pollination, seed distribution, herbivores, and carbon sequestration all across the planet (Brooks et al., 2002).

Millions of hectares of forest are burned every year in the tropics, leaving little islands of forest surrounded by a sea of pastures, crops, and scrubby regrowth. As a result, the fragmented landscape is quickly becoming one of our planet's most common features. Habitat fragments differ from full habitat in terms of ecology, and they are frequently biologically depauperate. This happens for a variety of reasons. To begin with, habitat destruction is frequently non-random. Humans prefer to clear regions that are next to productive, well-drained soils and avoid locations with steep or dissected topography. As a result, habitat remnants are frequently restricted to locations with poor soils, rough terrain, and minimal species diversity. Second, habitat fragments comprise only a portion of the habitat diversity available in a given area due to their small size (Wilcox, 1980).

Edge effect

The border, or interface, between two biological groups or between various landscape components is referred to as an edge. For example, where older forested patches meet recently harvested cut blocks, or where forests meet rock outcrops, riparian areas, grasslands, or other harvest kinds or development stages, there are edges. Ecotone is a transition zone that exists between two natural populations (Forman, 1995). Edge effects are created by a variety of circumstances, including the sort of edge present. Edges can be "inherent" or "induced." An inherent edge is a natural, usually long-lasting feature of the landscape that can be related to: topographic differences (e.g., the so-called tree line, the boundary where tree growth gives way to alpine conditions on mountains or grasslands in low-elevation dry valleys), soil type (e.g., the transition from boggy, peat soils to upland humus soils); presence of open water (e.g., lake or geomor); presence of open water (Thomas et al., 1984). Winds may penetrate some distance into the forest before lessening when an opening is of proper orientation and size. Wind toss may occur along the upwind margins of the forest interior if the winds are sufficiently strong (Chen et al., 1990).

An invasive species

A species is a plant or animal that is not native to a particular region (introduced species invasive) and has a proclivity to spread, causing harm to the environment, the human economy, and/or human health. A non-native or introduced species that has spread widely is sometimes referred to as a weed. However, not all imported species have negative environmental consequences (Elton, 1958). Ecosystems that are fully utilized by native species can be treated as zero-sum systems, with every gain for the invader resulting in a loss for the native. However, unilateral competitive dominance (and the extinction of native species as a result of greater teinvader populations) is not the rule. Invading species frequently cohabit alongside native species for long periods of time, and as the invasive species' population grows larger and denser and it adjusts to its new environment, its better competitive ability becomes obvious.

Pollution

Air pollution has a significant impact on biodiversity. Pollution has a deleterious impact on the atmosphere, lithosphere, and hydrosphere. Air pollution has a greater impact on lower life forms than it does on higher life forms. On land, plants are often more harmed than animals, but this is not the case in fresh water. Most species are declining as a result of pollution, with the exception of a few that are increasing. Plants consume atmospheric gases, such as air, on a daily basis in order to maintain their biological activities. Pollution comes from two different types of sources: stationary and numerous point sources. Wood-burning fires (on a small scale) and coal combustion in coal-fired power plants are examples of stationary point sources (on a large-scale). Automobiles and other vehicles are common examples of multiple point sources that are mobile. Environmental Protection Agency (EPA, 1997). Vehicles, which emit carbon monoxide, are the most significant source of pollution in the atmosphere.

Then there are sulphur-emitting industrial sources, steam and electric power plants, space heating, and finally waste burning. The all-important biogeochemical cycle has been disrupted by ruthless exploitation and contamination of the environment (Bodkin & Keller, 1998).

Water contamination has the potential to induce long-term changes in biodiversity, among other things. Water pollution occurs when numerous pollutants are introduced into water bodies, causing harm to ecosystems, human health, and water-based activities (swimming, diving, fishing, etc.). Water contamination is caused by heated water from nuclear power plants, as well as microbes from untreated sewage. It has far-reaching consequences, including contamination of ground and surface fresh water, oceans, and rains (in the form of acid rain). Industry is the most significant cause of pollution in most modern industrial nations, accounting for more than half of all water pollution and the most dangerous pollutants. The effluent, or waste-bearing water, is dumped into streams, lakes, or oceans, where it disperses the contaminating compounds and releases vast amounts of chemicals, nutrients, and organic material (Walday & Kroglund, 2002)

Eutrophication

One of the most noticeable long-term changes is eutrophication. Lakes, ponds, slow rivers, and river mouths are examples of aquatic habitats where this phenomenon happens. The steady supply of nutrients (mostly phosphorus and nitrogen) encourages the growth of certain algae. The decomposition of these algae consumes an excessive amount of oxygen. The number of species that can survive in such a suffocating watery habitat is reduced. The battle for space between humans and wildlife is raging all over the world (Mekete Belachew, 1996).

Climate change

Biodiversity is under threat from climate change. Although a certain amount of temperature volatility is necessary for ecosystem survival and function, a rapid shift is harmful to the diversity of life. In the future, climate change is predicted to increase biodiversity loss. Many species may simply be unable to adapt to quickly changing, likely unfavorable environments, putting them at risk of extinction. As CO_2 levels in the atmosphere rise over the next century, it is expected to become one of the most significant drivers of global biodiversity loss. Since the 1970s, worldwide average temperatures have grown by 0.2 °C every decade, while global average precipitation has increased by 2% in the last 100 years. Furthermore, climatic change occurs in a variety of locations (Pearce, 1991). Tropical forest ecosystems, for example, are subjected to far higher alterations than global averages, whereas other ecosystems and regions are subjected to secondary effects. Anthropogenic climate change is associated to variations in the frequency and intensity of severe events, which can harm biodiversity, in addition to changes in average temperatures, precipitation, and sea level. Several recent species extinctions may have been caused by climate change. In the last century, many species' ranges have shifted poleward and upward in elevation, and this trend is unlikely to stop. More warm-adapted species are being incorporated into local communities. Species interactions are becoming decoupled as a result of phonological changes in populations, such as shifting breeding cycles or deferred peaks of growth periods. Incompatibilities between plant and pollinator populations may be triggered by phonological alterations in flowering plants. This could result in the loss of both plants and pollinators, with predictable ramifications for the structure of mutuality networks (Blackwell et al., 1991).

Climate change's numerous components, such as temperature, rainfall, extreme events, CO_2 concentrations, and ocean dynamics, are expected to affect biodiversity at all levels, including gene, species, and habitat diversity. Due to directional selection, genetic drift, population differentiation, and fast migration, climatic change can reduce genetic diversity of populations at the most fundamental level of biodiversity. As a result, the likelihood of population adaption to new environmental conditions decreases, increasing the danger of extinction. Within the present globalization trends, increased competition for natural resources is occurring among numerous stakeholders with diverse interests all over the world (Omann et al., 2009).

Population explosion

Important habitats are being lost and damaged, as well as ecosystems. Biodiversity is essential to human well-being because it ensures the proper functioning of ecosystems that support human life. The word "biological diversity' refers to the genetic pool, range, and diversity of species and ecosystems. Over the last century, and particularly since 1950, when extraordinary levels of human population increase coincided with human activity, ecosystems have been subjected to significant changes and stress (Rockström et al., 2009). Many species are decreasing to critical population levels as a result of pollution, climate change, and direct human activities. The Convention on Biodiversity (CBD), an international accord aiming at preserving the planet's biodiversity and equitably sharing its benefits, set a goal of "substantially reducing" biodiversity loss by 2010 in 2002, although this goal was not realized (Rockström et al., 2009).

Overexploitation

Overexploitation, also known as overharvesting, occurs when a renewable resource is depleted to the point of no return. Overexploitation is one of the five main activities that jeopardize world biodiversity, according to ecology. Overexploitation of natural resources can result in resource damage, including extinction. Overexploitation, on the other hand, can be sustainable, as explained below when talking about fisheries. The quantity or quantity of a resource can affect its quality (Grafton et al., 2007). Overfishing can be used instead of overexploitation in the context of fishing, as can overgrazing in stock management, overlogging in forest management, overdrafting in aquifer management, and endangered species monitoring. Humans are not the only ones who engage in overexploitation. Overexploitation of native flora and fauna by introduced predators and herbivores, for example, does not have to result in resource degradation, nor does it have to be unsustainable. Depletion of the resource's numbers or amount, on the other hand, can affect its quality (Grafton et al., 2007).

BIODIVERSITY CONSERVATION DIFFICULTIES AND OPPORTUNITIES

Difficulties

LACK OF UNDERSTANDING. Some of Ethiopia's current environmental issues include the relationship between environment and development in general, as well as low public participation and community-based organizations in environmental management efforts. Furthermore, bad farming methods, along with a lack of awareness and consciousness, contribute significantly to the degradation of natural resources, such as forest destruction, soil degradation, and water resource degradation (Girma, 2001; Pender et al., 2002; Mahmud et al., 2005; MoARD & WB, 2007).

Lack of professionalism and technical standards. Another major stumbling block, not just among policymakers but also among many specialists, is that the development of physical soil and water conservation measures is seen as the primary means of halting land deterioration. Almost always, the outcomes are hurriedly assessed and critiqued without regard for their intended aim. Furthermore, the technological requirements for successful maintenance and use of these procedures are frequently overlooked (Ruttan Vernon, 1988).

Top-down planning approach to technical assistance. Although addressing the country's current level of poverty is a pressing priority, technology dissemination takes time and requires a methodical strategy to address community needs, creates competence and confidence, and demonstrates flexibility and risk sharing. Long-term sustainability is more likely to be accomplished if development is led from the bottom up and addresses the present needs and restrictions of farmers and communities. The expansion system has been dominated by quick answers rather than sustainability, quantity rather than quality, area coverage rather than impacts, command and control rather than participation (Yeraswork Admassie, 2000).

Weak linkages among various disciplines. Despite the government's massive investments in establishing up the institutional structure for national agricultural research, education, and extension systems, Gete et al. (2006) claim that there are no strong functional links between them. Formal technological development and the transmission of innovations from academics to local experts and communities, notably farmers, have been hampered by a lack of cooperation among research, extension, and education.

Policy, legislation and implementation constraints. Ethiopia has developed a number of major environmental policies and programs. Setting sound policies and strategies, on the other hand, is not a goal in and of itself. The objectives outlined in the various policies can only be met if and only if they are adequately executed. Although poor policy and strategy implementation remains a major restriction, other policies and strategies, such as regional investment policies, are impeding the correct implementation of effective and sustainable resource management methods. More policies and tactics need to be developed, and some need to be adjusted (Pender et al., 2002).

Socio-economic and bio-physical constraints. There are numerous socioeconomic and biophysical restrictions that stymie decisions to invest in and sustain suitable environmental policies. To begin with, one of the most fundamental concerns influencing environmental resource management is poverty, which continues to affect the majority of Ethiopians. It is a long-term problem that is wreaking havoc on the environment because the poor are forced to mine rapidly depleting natural resources in their surroundings. As a result, there is a significant link between environmental degradation and the country's worsening poverty (MoARD & WB, 2007). Climate variability is an important component among the biophysical restrictions. Ethiopia's dry regions (arid, semi-arid, and dry subhumid zones), which account for over 70% of the country's total geographical area, are particularly vulnerable to climate change, desertification, and drought.

Frequent restructuring of government institutions. Even though tackling land degradation through the rehabilitation of degraded lands has been a priority for the country, Gete et al. (2006) and MoARD & WB (2007) claim that institutions dealing with natural resources management have frequently been restructured, which undermines a sense of ownership by program staff, results in high staff turnover, wastes institutional capacity, and causes dissent.

Incomplete technology packages. Other factors reported by stakeholders include a lack of proper integration of introduced practices with 13 indigenous knowledge and practices, an insufficient number of available technologies to address the needs of the country's diverse agro-ecological conditions, and a failure to take into account the socio-economic context of different communities when introducing technologies (Nair & Muschler, 1993).

Lack of Participation in Resource Management. The lack of public participation in resource management has led in widespread opposition to centrally administered programs like as collectivization, villagization, and resettlement, as well as reforestation and soil conservation campaigns and tree-cutting prohibitions. Furthermore, the state sector's land development efforts have been done with little, if any, regard for traditional land users. Delineation of national parks in areas traditionally used by pastoralists and/or agro-pastoralists; construction of big fuel wood plantations in areas of mixed small-holder agriculture; huge fuel wood plantings in areas of mixed small-holder agriculture are just a few examples (FAO, 1986).

Opportunities

Efforts by the government and non-governmental entities to stem biodiversity degradation have yielded some promising results and several potential. It is thought that making appropriate use of these examples should be the beginning point for promoting successful efforts in the country to improve ecosystem resource management. Much research has focused on identifying problems or limits rather than capitalizing on potential so far. This section highlights some major opportunities to assist enhance intervention quality and scale up effective strategies.

Existence of environmental policies and strategies. Ethiopia has made commendable attempts to mitigate environmental deterioration through policy and strategy responses (Gedion, 2001). Ethiopia's Environmental Policy is one of the most important umbrella policies. This strategy comprehensively tackles a wide range of sectoral and cross-sectoral environmental challenges. The main goal is to ensuring that natural, human-made, and cultural resources, as well as the environment, are used and managed in a sustainable manner (EPA, 1997).

Rich experience on participatory watershed management. One of the most important requirements for successful land resource management projects is genuine community participation at all levels of the decision-making process. Despite the fact that there are numerous issues that require further investigation, the country has many positive experiences (Lakew et al., 2000).

Organizational setup of MoARD and National Research System. The MoARD's organizational structure, which includes regional and local agriculture bureaus that reach down to the kebele level, with three development agents in each kebele, has brought decentralized government down to the local community level. The national agricultural research system, which is made up of one federal and regional institutes with research centers covering almost all of the country's major agro-ecological zones, and the system of higher learning institutes, when combined, offer key opportunities for the country's successful implementation of sustainable land management. Another option to draw in international experience is the presence of multinational research organizations in the country (MoARD & WB, 2007).

Availability of both indigenous knowledge and scientific technologies. Local communities have a wealth of indigenous knowledge and practices that can be developed further to ensure long-term land resource management. Furthermore, various technologies for land resource management have been developed or generated by research in the country during the previous four decades (Yeraswork, 2000; Gete et al., 2006), including several novel and innovative soil and water conservation methods.

Existence of donor support and development partners. Several donors and development partners are interested in assisting interventions to improve land resource management, according to Pender et al. (2002) and the MoARD SLM Secretariat (2008). The essential difficulty here is making the best use of the available resources. This is due to a high amount of bureaucracy in resource utilization, the majority of which stems from donor procedures and requirements, as well as a lack of donor resource harmonization.

Conservation Oriented Crop Combination Land Management. The core ideas include incorporating conservation into the farming work cycle and ensuring that farming methods not only involve a few new inputs but also provide farmers with immediate economic benefits (Wood, 1990; Nair & Muschler, 1993). This method appears to combine Belay's (1992) three broad techniques for controlling soil erosion: agronomic methods, which aim to control erosion by improving vegetative cover; soil management techniques, which aim to control erosion by improving soil particle aggregation; and structural soil conservation methods, which control erosion by shortening the length of the soil particles. Tied ridges, bunds, fanya juu terraces, bench terraces, hillside terraces, diversion ditches (cut-offs), rivers, and specific water harvesting structures are all part of this technique (Thomas, 1984; MOA, 1986). Intercropping and relay or sequential cropping; crop rotation; livestock farming integrated with arable cultivation; the cut and carry method of using degraded pasture, controlled grazing, and tethering; and widespread use of semi-permanent crops like enset (false banana) and cassava or self-seeding and volunteering crops like legumes and sweet potatoes are just a few examples. It is unsurprising that agroforestry is now being prioritized (Nair & Muschler, 1993; Blackwell, 1991; MOA, 1986).

Agroforestry practice. Agroforestry is a new name for a collection of traditional activities (Nair & Muschler, 1993). It is a catch-all word describing land-use systems and technologies in which woody perennials (trees, shrubs, palms, bamboo, and so on) are intentionally employed alongside agricultural crops or animals on the same land-management units, in some sort of spatial arrangement or temporal sequence. According to Nair and Muschler, agroforestry is a hybrid of agriculture and forestry that includes mixed land-use methods that have evolved in response to the unique needs and conditions of tropical developing countries. Agroforestry encompasses a wide range of methods, from basic shifting cultivation to complex hedgerow intercropping systems. The planned growing or retention of trees with crops or animals in interacting combinations for multiple products or advantages from the same management unit is common to all of the diverse systems (Nair & Muschler, 1993). Agroforestry makes trees more accessible and spreads their advantages more widely because they are scattered across farms rather than concentrated in plantations. Furthermore, agroforestry programs are known to be 10–20% less expensive than government-run fuel wood plantings (Postel & Heise, 1988).

CONCLUSIONS

The preservation of the planet's biological diversity is an essential objective in and of itself. Biodiversity has direct dietary value in food, agriculture, medicine, and industry, among other things. It has aesthetic and recreational value as well. The biggest threat to biodiversity is habitat destruction, not the destruction of plants and animals themselves. Human settlements expand as a result of population growth, resulting in increased need for food, fuel, and building materials. Agriculture modernization also poses a threat to potentially significant local crops. In a global perspective, it is believed that slightly more than 1000 animal species and subspecies are threatened with extinction at a pace of one per year, while 20,000 flowering plants are thought to be endangered (UNEP, 2004). This review looks at various real-world scenarios where biodiversity loss is explained by the interaction of a number of socio-economic variables as well as decision-making and policy decisions in a variety of environmental contexts. By focusing on marine, coastal, wetlands, and forest ecosystems, this study focuses on real-world examples while also putting the extensive literature and ongoing research on biodiversity loss in context. The loss of biodiversity is predicted to accelerate in the future decades, according to most scenario projections. There have been a number of frameworks developed in the past for examining the complex interaction of stressors and factors impacting biodiversity. The underlying thread running through all of these theories is that much of the pressure on biodiversity is caused by human-induced ecological disturbance, which manifests itself in a variety of complex pathways spanning several physical and temporal dimensions. Biome, geography, and climate, kind of pressure (i.e., over-exploitation of wildlife vs. habitat modification), economic backdrop in the biodiversity host country, trade patterns, type of governance structure, and other factors all influence how biodiversity is lost. Because of the increasing levels of biodiversity loss, environmental consequences such as air pollution, edge effect, invasive species, habitat destruction and fragmentation; and climate change (e.g., global warming) are of significant concern. However, problems connected with biodiversity loss not only worsen environmental circumstances, but also have negative consequences for a country's economy, long-term growth, and people's health, ultimately leading to species extinction.

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