

Conserving Ecosystems for Our Health and Well-Being

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Kariuki Muigua

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Abstract

This paper critically discusses the need to conserve ecosystems. It argues that conserving ecosystems is vital for our health and well-being since it ensures the sustainable and continuous supply of ecosystem services. The paper interrogates the efficacy of measures adopted towards conserving ecosystems at the global, continental, and national levels. It also examines some of the ecosystem conservation challenges and their impact on human health and well-being. Finally, the paper offers proposals towards effective and efficient conservation of ecosystems for our health and well-being.

1.0 Introduction

Ecosystems have been defined as a community of organisms and their physical environment interacting as an ecological unit¹. An Ecosystem has also been defined as a system comprising all living organisms existing with one another in a unit of space interacting with abiotic components². The *Convention on Biological Diversity*³ defines an ecosystem as a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

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Arbitration (PCA) [February, 2024].

¹ United Nations Environment Programme., 'Ecosystem' Available at <https://leap.unep.org/en/knowledge/glossary/ecosystem> (Accessed on 28/02/2024)

² Daily. G., 'What Are Ecosystem Services?' Available at https://www.regenpreneur.com/uploads/3/9/4/8/39486393/what_are_ecosystem_services_1.pdf (Accessed on 28/02/2024)

³ United Nations., 'Convention on Biological Diversity.' Available at <https://www.cbd.int/doc/legal/cbd-en.pdf> (Accessed on 28/02/2024)

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There is widespread consensus that ecosystems are the foundation of life on Earth⁴. For example, they provide humanity with clean air, fresh water, and food⁵. In addition, ecosystems regulate the climate, protect against natural disasters, and support biodiversity⁶. The benefits that humanity obtains from ecosystems have been referred to as ecosystem services⁷. These services have been defined as the condition and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life⁸. According to the United Nations Environment Programme (UNEP), ecosystem services include products obtained from ecosystems (such as freshwater, food, fuel, genetic resources, natural medicines among others); benefits obtained from the regulation of ecosystem processes (such as water erosion, waste, climate and natural hazards); cultural services (including cultural diversity, educational values, social relations, heritage); and services that are necessary for the production of other ecosystem services (including primary production, nutrient cycling, and water cycling)⁹.

It has further been pointed out that ecosystem services maintain biodiversity and the production of ecosystems goods which include seafood, forage, timber, biomass fuels, natural fiber, and many pharmaceutical and industrial products¹⁰. Further, the harvest and trade in ecosystem goods represents an important part of the human economy¹¹. Ecosystem services also provide many intangible aesthetic and cultural benefits¹². Ecosystems are thus vital for survival of life on earth.

⁴ Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Available at <https://www.linkedin.com/pulse/importance-ecosystem-conservation-human-well-being-maurice-murphy> (Accessed on 28/02/2024)

⁵ Ibid

⁶ Ibid

⁷ Daily. G., 'What Are Ecosystem Services?' Op Cit

⁸ Ibid

⁹ United Nations Environment Programme., 'Ecosystem Service' Available at <https://leap.unep.org/en/knowledge/glossary/ecosystem-service> (Accessed on 28/02/2024)

¹⁰ Daily. G., 'What Are Ecosystem Services?' Op Cit

¹¹ Ibid

¹² Ibid

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Despite their importance, it has been pointed out that human induced activities such as deforestation, pollution, and climate change are threatening the health and stability of ecosystems worldwide¹³. It is therefore necessary to conserve ecosystems in order to ensure the continued supply of ecosystem services which are key to the survival of life on earth¹⁴. Conservation has been defined as the active management of the earth's natural resources and environment to ensure their quality is maintained and that they are wisely used¹⁵. It has been pointed out that the concept of conservation is used in the context of biodiversity, environment, and natural resources, including protection and management¹⁶. It refers to the act of preserving, guarding or protecting, meanwhile keeping in mind the sustainable character and wise use of the environment and natural resources¹⁷. The idea of conservation is wider in scope than preservation¹⁸. It has been pointed out that conservation is a form of environmental protection that allows humans to use natural resources but encourages sustainability and minimal ecological impact¹⁹. It ensures that resources persist for future generations while protecting ecosystems and species²⁰. Preservation on the other hand involves the environment and natural resources not being consumed by humans and instead being maintained in their pristine form²¹. Conservation therefore seeks to protect the environment through sustainable and responsible use of the environment and natural resources whereas preservation seeks to protect the environment and natural resources from harmful human activities²². Conservation is the ideal form of protection since it ensures that human-beings are able

¹³ Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Op Cit

¹⁴ Ibid

¹⁵ United Nations Environment Programme., 'Conservation' Available at <https://leap.unep.org/en/knowledge/glossary/conservation> (Accessed on 28/02/2024)

¹⁶ Ibid

¹⁷ Ibid

¹⁸ Ibid

¹⁹ Conservation vs. Preservation | Definition & History., Available at <https://study.com/academy/lesson/conservationists-vs-preservationists-definition-differences.html#:~:text=On%20one%20side%2C%20we%20have,maintained%20in%20their%20pristine%20form.> (Accessed on 28/02/2024)

²⁰ Ibid

²¹ Ibid

²² National Geographic., 'Preservation' Available at <https://education.nationalgeographic.org/resource/preservation/> (Accessed on 28/02/2024)

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to benefit from ecosystem services while also ensuring that ecosystems are sustainably managed for the benefit of future generations²³.

This paper critically discusses the need to conserve ecosystems. It argues that conserving ecosystems is vital for our health and well-being since it ensures the sustainable and continuous supply of ecosystem services. The paper interrogates the efficacy of measures adopted towards conserving ecosystems at the global, continental, and national levels. It also examines some of the ecosystem conservation challenges and their impact on human health and well-being. Finally, the paper offers proposals towards effective and efficient conservation of ecosystems for our health and well-being.

2.0 Conserving Ecosystems: Progress and Setbacks

It has been pointed out that conserving ecosystems is essential for maintaining the balance of nature and ensuring the sustainability of our planet²⁴. Conservation of ecosystems is also crucial for human well-being since it directly affects human health²⁵. It has correctly been pointed out that ecosystem services are indispensable to the well-being of all people, everywhere in the world²⁶. Ecosystems provide us with clean air and water, which are essential for our survival²⁷. For example, it has been observed that forests act as natural filters, absorbing pollutants and producing oxygen²⁸. Further, wetlands also play a vital role in purifying water and preventing floods²⁹. It has been argued that without these natural systems, human beings would be exposed to harmful pollutants and diseases³⁰. Conserving ecosystems is therefore vital for human health and well-being.

²³ United Nations Environment Programme., 'Conservation' Op Cit

²⁴ Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Op Cit

²⁵ Ibid

²⁶ Millennium Ecosystem Assessment., 'Ecosystems and Human Health' Available at <https://www.millenniumassessment.org/documents/document.763.aspx.pdf> (Accessed on 28/02/2024)

²⁷ Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Op Cit

²⁸ Ibid

²⁹ Ibid

³⁰ Ibid

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Where ecosystems are not efficiently conserved, human-beings are at risk of health impacts³¹. For example, it has been observed that in poor countries, especially in rural areas, the health of human populations is highly dependent upon the services of local productive ecosystems for food³². Chronic micronutrient deficiency is rampant in areas where such ecosystems are not properly conserved³³. It has also been pointed out that there are high incidences of water-associated infectious diseases which claim up to 3.2 million lives each year and approximately 6% of all deaths globally in places where fresh water ecosystems are not appropriately conserved³⁴. In addition, ineffective conservation of ecosystems could cause or worsen the threat of climate change with direct impacts on human health such as increased mortality from heat waves and scarcity of food, water, and energy supplies³⁵. Conserving ecosystems is therefore vital in ensuring human health and well-being. It has been asserted that damaged ecosystems only worsen the climate crisis, place communities and people at risk, and undermine food and energy security³⁶.

It has also been correctly observed that conservation of ecosystems also helps to protect biodiversity, which is the variety of life on Earth³⁷. It has been observed that biodiversity is essential for maintaining the health and resilience of ecosystems³⁸. Biodiversity provides humanity with food, medicine, and other resources and also supports ecosystem services such as pollination, soil fertility, and pest control³⁹. It has been argued that conserving biodiversity ensures the continuing existence of a wide range of crops that could be able to withstand disease, and potentially useful biochemicals like those

³¹ Millennium Ecosystem Assessment., 'Ecosystems and Human Health' Op Cit

³² Ibid

³³ Ibid

³⁴ Ibid

³⁵ Muigua. K., 'Placing Health at the Centre of Climate Action' Available <https://kmco.co.ke/wp-content/uploads/2023/12/Placing-Health-at-the-Centre-of-Climate-Action-x.pdf> (Accessed on 28/02/2024)

³⁶ Institute of Sustainability Studies., 'Exploring the Urgency of Conserving Ecosystems' Available at <https://instituteofsustainabilitystudies.com/insights/guides/exploring-the-urgency-of-conserving-ecosystems/> (Accessed on 28/02/2024)

³⁷ Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Op Cit

³⁸ Ibid

³⁹ Ibid

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used in healthcare⁴⁰. It also ensures the availability of species for pest control and pollination which are vital processes in the provision of ecosystems services such as food⁴¹. Conserving biodiversity therefore maintains the many advantages that this diversity offers for both humanity and nature⁴².

Conserving ecosystems is also essential in confronting climate change. For example, it has been asserted that terrestrial and marine ecosystems play an important role in regulating climate since they currently absorb roughly half of man-made carbon emissions⁴³. Ecosystems such as forests and oceans play a crucial role in absorbing and storing carbon dioxide, helping to reduce the impacts of climate change⁴⁴. In addition, biodiversity and ecosystem services help human-beings to adapt to and mitigate climate change and are therefore a crucial part of global efforts to combat climate change⁴⁵. Therefore, by conserving nature and restoring ecosystems human beings can reduce vulnerability and increase resilience to climate change⁴⁶. As a result, it has been correctly observed that conservation and restoration of ecosystems is a major, cost-efficient ally in our fight against climate change⁴⁷. Tackling climate change is important in ensuring good health and well-being and conservation of ecosystems can be humanity's key ally in this fight⁴⁸.

The need to conserve ecosystems is enshrined under the *United Nations 2030 Agenda for Sustainable Development*⁴⁹. The Agenda represents a shared blue print for peace and

⁴⁰ Institute of Sustainability Studies., 'Exploring the Urgency of Conserving Ecosystems' Op Cit

⁴¹ Ibid

⁴² Ibid

⁴³ European Commission., 'Nature's Role in Climate Change' Available at https://climate.ec.europa.eu/system/files/2016-11/nature_and_climate_change_en.pdf (Accessed on 28/02/2024)

⁴⁴ Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Op Cit

⁴⁵ European Commission., 'Nature's Role in Climate Change' Op Cit

⁴⁶ Ibid

⁴⁷ Ibid

⁴⁸ Ibid

⁴⁹ United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at

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prosperity for *people* and *the planet* in the quest towards the ideal of Sustainable Development⁵⁰ (Emphasis added). It envisages a world where humanity lives in harmony with nature and in which wildlife and other living species are protected⁵¹. At the core of the agenda are 17 Sustainable Development Goals (SDGs) which seek to strike a balance between human development and environmental protection⁵². The Agenda recognizes that social and economic development depends on the sustainable management of our planet and natural resources⁵³. In addition, the Agenda represents a global determination to *conserve* and sustainably use oceans and seas, freshwater resources, as well as forests, mountains and drylands and to protect biodiversity, *ecosystems* and wildlife(Emphasis added)⁵⁴. In addition, some of the SDGs contain targets towards conserving ecosystems. For example, SDG 14.2 seeks to enhance the conservation and sustainable management of marine and coastal ecosystems in order to avoid significant adverse impacts⁵⁵. In addition, SDG 15.1 seeks to ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services in particular forests, wetland, mountains and drylands⁵⁶. Realizing the SDGs as envisaged under the 2030 Agenda for Sustainable Development is therefore key in enhancing the conservation of ecosystems.

Conserving ecosystems is also a key agenda under the *Rio Declaration on Environment and Development*⁵⁷. The Declaration seeks to balance the interests of states in exploiting their natural resources for development and environmental conservation with the aim of achieving Sustainable Development⁵⁸. It stipulates that human beings are at the centre of

<https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf> (Accessed on 09/02/2024)

⁵⁰ Ibid

⁵¹ Ibid

⁵² Ibid

⁵³ Ibid

⁵⁴ Ibid

⁵⁵ Ibid, SDG 14.2

⁵⁶ Ibid

⁵⁷ United Nations General Assembly., 'Report of the United Nations Conference on Environment and Development: Rio Declaration on Environment and Development.' A/CONF. 151/26 (Vol.1)

⁵⁸ Ibid, Principle 2

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concerns for Sustainable Development and are entitled to a *healthy and productive life in harmony with nature*⁵⁹. It further states that in order to achieve Sustainable Development, *environmental conservation shall constitute an integral part of the development process* and cannot be considered in isolation from it⁶⁰(Emphasis added). The Rio Declaration upholds key environmental principles that are vital in conserving ecosystems. These principles include Sustainable Development, inter and intra generational equity, environmental protection, public participation, the precautionary principle and the principle of state cooperation⁶¹. Fostering the principles enshrined under the Rio Declaration is of utmost importance if we are to effectively conserve ecosystems.

The *World Charter for Nature*⁶² also sets out the importance of conserving ecosystems. According to the Charter, human beings must acquire the knowledge to maintain and enhance their ability to use natural resources in a manner which ensures the preservation of the species and *ecosystems* for the benefit of present and future generations.⁶³ Further, in order to effectively conserve ecosystems, the Charter requires special protection to be given to unique areas, to representative samples of all the different types of ecosystems and to the habitats of rare or endangered species⁶⁴. It also requires ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by humanity to be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist⁶⁵. Of vital importance, the Charter requires the status of natural processes, *ecosystems* and species to be closely monitored to enable early detection of degradation or threat, in order to ensure timely intervention and facilitate the evaluation

⁵⁹ Ibid, Principle 1

⁶⁰ Ibid, Principle 4

⁶¹ Ibid

⁶² United Nations General Assembly., World Charter for Nature., A/RES/37/7

⁶³ Ibid, Preamble

⁶⁴ Ibid, Principle 3

⁶⁵ Ibid, Principle 4

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of *conservation* policies and methods⁶⁶. The World Charter for Nature is therefore a vital instrument geared towards conserving ecosystems.

In addition, to the foregoing, several legal instruments have been adopted at the global, continental, and national levels towards conserving specific types of ecosystems. For example, at the global level, the *Convention on Biological Diversity*⁶⁷ was adopted with the objective of fostering the *conservation* of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding⁶⁸. The Convention sets out key biodiversity conservation strategies which are: in-situ and ex-situ conservation⁶⁹. According to the Convention, in-situ conservation means the *conservation of ecosystems* and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings⁷⁰. On the other hand ex-situ conservation means the conservation of components of biological diversity outside their natural habitats⁷¹. In addition, there has been the adoption of legal instruments such as the *Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)*⁷² geared towards conserving wetlands.

At a continental level, the *African Convention on the Conservation of Nature and Natural Resources*⁷³, recognizes that the *conservation of the global environment* is a common concern of

⁶⁶ Ibid, Principle 19

⁶⁷ United Nations., 'Convention on Biological Diversity.' Op Cit

⁶⁸ Ibid, article 1

⁶⁹ Ibid

⁷⁰ Ibid, article 2

⁷¹ Ibid

⁷² Convention on Wetlands of International Importance especially as Waterfowl Habitat., Available at https://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf (Accessed on 29/02/2024)

⁷³ African Union., African Convention on the Conservation of Nature and Natural Resources., Available at https://au.int/sites/default/files/treaties/41550-treaty-Charter_ConservationNature_NaturalResources.pdf (Accessed on 09/02/2024)

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human kind as a whole, and the *conservation of the African environment* a *primary concern of all Africans*⁷⁴ (Emphasis added). It provides that States are responsible for protecting and conserving their environment and natural resources and for using them in a sustainable manner with the aim to satisfy human needs according to the carrying capacity of the environment⁷⁵. The Convention seeks to enhance environmental protection; to foster the *conservation and sustainable use of natural resources*; and to harmonize and coordinate policies in these fields with a view to achieving ecologically rational, economically sound and socially acceptable development policies and programmes⁷⁶ (Emphasis added). The Convention acknowledges the right of all people to a satisfactory environment favourable to their development; the duty of States, individually and collectively to ensure the enjoyment of the right to development; and the duty of States to ensure that developmental and environmental needs are met in a sustainable, fair and equitable manner⁷⁷. It requires states to ensure effective conservation of those ecosystems which are most representative of and peculiar to areas under their jurisdiction, or are characterized by a high degree of biological diversity⁷⁸. The Convention also requires states to ensure that policies, plans, programmes, strategies, projects and activities likely to affect natural resources, *ecosystems* and the environment in general are the subject of adequate impact assessment at the earliest possible stage and that regular environmental monitoring and audit are conducted⁷⁹. Further, in order to ensure effective conservation of transboundary ecosystems in Africa, the Convention stipulates that whenever a natural resource or an ecosystem is transboundary, the parties concerned shall undertake to cooperate in the conservation, development and management of such resource or ecosystem and if the need arises, set up interstate commissions for their conservation and

⁷⁴ Ibid, Preamble

⁷⁵ Ibid

⁷⁶ Ibid, Article II

⁷⁷ Ibid, Article III

⁷⁸ Ibid, XII

⁷⁹ Ibid, article XIV (2) (b)

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sustainable use⁸⁰. There is need to effectively implement this Convention in order to strengthen the conservation of ecosystems in Africa.

At a national level, several laws have been enacted towards ensuring the conservation of particular ecosystems. For example, in Kenya, the *Wildlife Conservation and Management Act*⁸¹ aims to ensure the protection, *conservation*, sustainable use and management of wildlife in Kenya; the *Fisheries Management and Development Act*⁸² provides the legal framework for the conservation, management and development of fisheries and other aquatic resources; and the *Forest Conservation and Management Act*⁸³ provides the legal framework for the development and sustainable management, including conservation and rational utilization of all forest resources for the socio-economic development of the country. In addition, the Environmental Management and Co-ordination Act establishes the legal and institutional framework for the management of the environment in Kenya⁸⁴. The Act requires the state to adopt adequate measures to promote the conservation of the various terrestrial and aquatic ecosystems under the jurisdiction of Kenya⁸⁵. It also requires special arrangements to be adopted towards the protection of species, ecosystems and habitats threatened with extinction⁸⁶.

Despite the enactment of laws at the global, continental, and national levels towards conserving ecosystems, it has been pointed out that human activities such as deforestation, pollution, and climate change are threatening the health and stability of ecosystems worldwide⁸⁷. It has also been pointed out that conservation efforts are facing many challenges, including habitat destruction, pollution, and climate change⁸⁸.

⁸⁰ Ibid, article XXII (2) (e)

⁸¹ Wildlife Conservation and Management Act, Cap 376, Laws of Kenya, Government Printer, Nairobi

⁸² Fisheries Management and Development Act., Cap 378, Laws of Kenya, Government Printer, Nairobi

⁸³ Forest Conservation and Management Act, Cap 385, Laws of Kenya, Government Printer, Nairobi

⁸⁴ Environmental Management and Co-ordination Act., Cap 387, Laws of Kenya, Government Printer, Nairobi

⁸⁵ Ibid, S 51 (b)

⁸⁶ Ibid, S 51 (d)

⁸⁷ Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Op Cit

⁸⁸ Ibid

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According to the United Nations, the triple planetary crisis of climate change, pollution and loss of biodiversity is a major threat to the stability of ecosystems⁸⁹. It has also been pointed out that human encroachment is a key threat to ecosystems conservation⁹⁰. It is necessary to address these challenges in order to foster effective conservation of ecosystems.

3.0 Way Forward

In order to ensure effective conservation of ecosystems, it is necessary to maintain critical ecosystem processes and functions⁹¹. It has correctly been pointed out that by protecting biodiversity, conserving water, managing waste responsibly, supporting local environmental organisations, engaging in restoration projects, educating and raising awareness, protecting wildlife, and practising sustainable land use, it becomes possible to conserve and enhance ecosystems⁹². It has also been posited that there is need to maintain critical ecosystem processes such as water cycling, nutrient cycling (which include the carbon and nitrogen cycle), energy flow, and community dynamics in order to ensure efficient conservation of ecosystems⁹³. These processes are vital for the health and stability of ecosystems⁹⁴.

It is also necessary to minimize and control external threats to ecosystems⁹⁵. Ecosystems are being affected by external threats including pollution, large-scale human

⁸⁹ United Nations Climate Change., 'What is the Triple Planetary Crisis?' Available at <https://unfccc.int/news/what-is-the-triple-planetary-crisis> (Accessed on 29/02/2024)

⁹⁰ Tsavo Trust., 'What is Ecosystem Conservation, and Why is it so Important?' Available at <https://tsavotrust.org/what-is-ecosystem-conservation-and-why-is-it-so-important/> (Accessed on 29/02/2024)

⁹¹ DGB Group., 'How Can You Maintain the Ecosystems in your Surrounding Area?' Available at <https://www.green.earth/blog/how-can-you-maintain-the-ecosystems-in-your-surrounding-area#:~:text=By%20promoting%20biodiversity%2C%20conserving%20water,preserving%20and%20enhancing%20local%20ecosystems.> (Accessed on 29/02/2024)

⁹² Ibid

⁹³ Ibid

⁹⁴ Ibid

⁹⁵ Wilson. J., & Primack. R., 'Conserving Ecosystems' Available at <https://books.openbookpublishers.com/10.11647/obp.0177/ch10.xhtml#:~:text=1%20Maintaining%20critical%20ecosystem%20processes,energy%20flow%2C%20and%20community%20dynamics.> (Accessed on 29/02/2024)

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disturbances, overharvesting, and habitat destruction⁹⁶. In addition, ecosystems are also being affected by invasive species which degrade and destroy natural ecosystems by outcompeting native species, disturbing ecosystem processes, and altering the physical environment⁹⁷. It is therefore necessary to conserve ecosystems by controlling external threats through such as pollution, large-scale human disturbances, overharvesting, and habitat destruction⁹⁸. This calls for the sustainable use and management of natural resources and ecosystems⁹⁹. It is also necessary to control invasive species in order to minimize their threat to native species in ecosystems¹⁰⁰.

There is also need to restore damaged ecosystems¹⁰¹. Restoration is a process that aims to recover the ecological functionality and enhance human well-being in deforested and degraded landscapes and ecosystems¹⁰². It is an important approach that not only returns landscapes and ecosystems to a healthy state, but also increases the amount of carbon sequestered, improves biodiversity and the quality of soil and water in the ecosystem, and provides economic benefits for communities that depend on such landscapes and ecosystems¹⁰³. Restoration is therefore vital in returning ecosystems to a healthy state and combating climate change¹⁰⁴. Some of the approaches that can be adopted towards restoring ecosystems include restoring farmlands through reducing tillage, using more

⁹⁶ Ibid

⁹⁷ Ibid

⁹⁸ Ibid

⁹⁹ Muigua. K., 'Nurturing Our Environment for Sustainable Development' Glenwood Publishers Limited, 2016

¹⁰⁰ Wilson. J., & Primack. R., 'Conserving Ecosystems' Op Cit

¹⁰¹ Muigua. K., 'Restoring Landscapes and Ecosystems for Climate Mitigation' Available at <https://kmco.co.ke/wp-content/uploads/2024/02/Restoring-Landscapes-and-Ecosystems-for-Climate-Mitigation.pdf> (Accessed on 29/02/2024)

¹⁰² Food and Agriculture Organization., 'The Key Role of Forest and Landscape Restoration in Climate Action.' Available at <https://www.fao.org/documents/card/en/c/cc2510en> (Accessed on 29/02/2024)

¹⁰³ World Economic Forum., 'What are Natural Climate Solutions?' Available at <https://www.weforum.org/agenda/2021/09/what-are-natural-climate-solutions-ncsalliance/#:~:text=NCS%20are%20actions%20that%20avoid,forest%20conservation%2C%20restoration%20and%20management> (Accessed on 29/02/2024)

¹⁰⁴ Muigua. K., 'Restoring Landscapes and Ecosystems for Climate Mitigation' Op Cit

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natural fertilizer and pest control, and growing more diverse crops, including trees¹⁰⁵; restoring forest ecosystems through replanting and reducing the pressure on forests so that trees re-grow naturally¹⁰⁶; restoring rivers and lakes by halting pollution, reducing and treating waste, managing demand for water and fish, and reviving vegetation above and below the surface¹⁰⁷; restoring grasslands and savannah through clearing woody vegetation and re-seeding native grasses, and the reintroduction and protection of lost plants and animals until they are established¹⁰⁸; and ensuring that marine ecosystems such as coral reefs, mangroves and seagrasses are carefully managed and actively restored so that oceans can continue to support billions of livelihoods globally¹⁰⁹.

Further, it is imperative to ensure monitoring of ecosystems¹¹⁰. Monitoring is vital in detecting disturbances to ecosystems such as loss of biodiversity, destruction of forests, and pollution of freshwater and marine ecosystems¹¹¹. According to UNEP, the capacity to monitor ecosystems and ensure that this information continuously feeds into collaborative structures is critical for ecosystem management¹¹². Monitoring can aid in the formulation of effective conservation strategies depending on the disturbances done to a particular ecosystem¹¹³. It is therefore necessary to embrace monitoring of ecosystems in order to ensure their effective conservation.

¹⁰⁵ United Nations Environment Programme., 'A Beginner's Guide to Ecosystem Restoration' Available at <https://www.unep.org/news-and-stories/story/beginners-guide-ecosystem-restoration#:~:text=Restoration%20means%20halting%20pollution%2C%20reducing,plants%20grow%20on%20their%20banks>. (Accessed on 29/02/2024)

¹⁰⁶ Ibid

¹⁰⁷ Ibid

¹⁰⁸ Ibid

¹⁰⁹ Ibid

¹¹⁰ Wilson. J., & Primack. R., 'Conserving Ecosystems' Op Cit

¹¹¹ Ibid

¹¹² United Nations Environment Programme., 'Preserving our Ecosystems' Available at <https://www.unep.org/explore-topics/ecosystems-and-biodiversity/what-we-do/preserving-our-ecosystems> (Accessed on 29/02/2024)

¹¹³ Ibid

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Finally, it is vital to combat climate change¹¹⁴. It has been pointed out that climate change is altering ecosystem productivity, exacerbating the spread of invasive species, and changing how species interact with each other and with their environment¹¹⁵. Impacts of climate change such as intense droughts may force species to migrate to higher latitudes or higher elevations where temperatures are more conducive to their survival¹¹⁶. In addition, sea level rises can result in saltwater intrusion into a freshwater system a situation that may force some key species to relocate or die, thus removing predators or prey that are critical in the existing food chains¹¹⁷. Climate change also affects ecosystem services such as carbon capture and storage¹¹⁸. For example, forest ecosystems play a critical role in the carbon cycle, helping to absorb carbon dioxide from the atmosphere and store it in roots, soil, and the forest floor¹¹⁹. However, climate change-driven increases in wildfires, flooding, pests, and diseases can limit the ability of an ecosystem to provide this important service¹²⁰. Climate change is therefore a major challenge in the conservation of ecosystems. It is therefore necessary for all countries to take urgent action and combat climate change and its impacts in order to enhance the conservation of ecosystems¹²¹.

The foregoing among other measures are vital in ensuring that ecosystems are conserved appropriately for our health and well-being.

¹¹⁴ Malhi. Y et al., 'Climate Change and Ecosystems: Threats, Opportunities and Solutions' Available at <https://royalsocietypublishing.org/doi/10.1098/rstb.2019.0104> (Accessed on 29/02/2024)

¹¹⁵ Ibid

¹¹⁶ Ibid

¹¹⁷ Ibid

¹¹⁸ United States Environmental Protection Agency., 'Climate Change Impacts on Ecosystems' Available at <https://www.epa.gov/climateimpacts/climate-change-impacts-ecosystems> (Accessed on 29/02/2024)

¹¹⁹ Ibid

¹²⁰ Ibid

¹²¹ Ibid

4.0 Conclusion

Ecosystems are the foundation of life on Earth¹²². Ecosystems services such as freshwater, food, fuel, genetic resources, natural medicines among others are necessary for the survival of humanity¹²³. Conserving ecosystems is therefore vital for human health and well-being since it ensures the continued supply of ecosystem services¹²⁴. Despite the importance of ecosystems, conservation efforts are facing many challenges, including habitat destruction, pollution, and climate change¹²⁵. It is necessary to address these challenges in order to enhance the conservation of ecosystems for our health and well-being. In order to achieve this goal, it is important to maintain critical ecosystem processes and functions¹²⁶; minimize and control external threats to ecosystems such as invasive species¹²⁷; restore damaged ecosystems¹²⁸; ensure monitoring of ecosystems¹²⁹; and combat climate change¹³⁰. Conserving ecosystems for our health and well-being is the way to go for the benefit of both nature and humanity.

¹²² Murphy. M., 'The Importance of Ecosystem Conservation for Human Well-being' Op Cit

¹²³ Ibid

¹²⁴ Millennium Ecosystem Assessment., 'Ecosystems and Human Health' Op Cit

¹²⁵ United Nations Climate Change., 'What is the Triple Planetary Crisis?' Op Cit

¹²⁶ DGB Group., 'How Can You Maintain the Ecosystems in your Surrounding Area?' Op Cit

¹²⁷ Wilson. J., & Primack. R., 'Conserving Ecosystems' Op Cit

¹²⁸ Muigua. K., 'Restoring Landscapes and Ecosystems for Climate Mitigation' Op Cit

¹²⁹ Wilson. J., & Primack. R., 'Conserving Ecosystems' Op Cit

¹³⁰ Malhi. Y et al., 'Climate Change and Ecosystems: Threats, Opportunities and Solutions' Op Cit

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