

**Title:** Threats to biodiversity and the relevance and usefulness of biodiversity for sustainable development in biology within South Africa.

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**Abstract:**

Biodiversity is not sustainable because there are seven different threats impacting on it throughout the world. This was a scientific essay about the worldwide study on the relevance and usefulness of biodiversity and sustainable development globally, and how two chosen threats impacted on it. In addition, the study included a short reflection on biology, and how that science related to biodiversity particularly in South Africa. The body paragraphs had to give a definition of each threat, as well as examples of how and where these threats occur. In addition, this essay had to demonstrate how these threats could be alleviated and give relevant source referencing to substantiate the arguments. From this study it became evident that although global citizens do not yet realise the gravity of biodiversity loss, it already does have a severe impact on sustainable development in certain countries.

**Keywords:**

Climate change

Deforestation

Biodiversity

Sustainable development

# **Threats to biodiversity and the relevance and usefulness of biodiversity for sustainable development in biology within South Africa.**

## **1.Introduction**

The variety of all living creatures on Earth, known as biodiversity, has been decreasing at an alarming rate in recent years. This decline is primarily due to human activities such as deforestation, pollution, land use, and climate change (Factory Farming,2022). The issue of biodiversity has received considerable attention because it functions as a network between all life forms as they interact (Factory Farming, 2022). This essay will argue the threats to biodiversity and sustainable development attributed to human actions. The first section of the essay will examine the threats to biodiversity, specifically deforestation and climate change. The second section will discuss the importance and utility of biodiversity for long-term development in my field of study in South Africa.

## **2.Threats to biodiversity**

### **2.1 Deforestation**

Deforestation has a detrimental effect on biodiversity and sustainable development. According to Paiva et al. (2020), deforestation is removing trees from their natural habitat to make way for roadways, which facilitates the removal of prime lumber and the conversion of the forest into subsistence farming or present automated monoculture. As a result, natural ecosystems are strained by deforestation, which reduces local biodiversity and removes vegetation cover in places designated as being of particular concern for conversation (Paiva et al.,2020). A tactic for preserving nature is the establishment of protected zones. Constructive measures and ~~governmental policies to conserve biodiversity~~ can help achieve the importance of biodiversity conservation. In addition, geo-technologies can help with monitoring the destruction of protected areas. Paiva, et al. (2020) in figure 1, estimates that the Brazilian Amazon forest contains roughly one-third of the world's rainforests; this forest is an excellent source of resources for the Brazilian

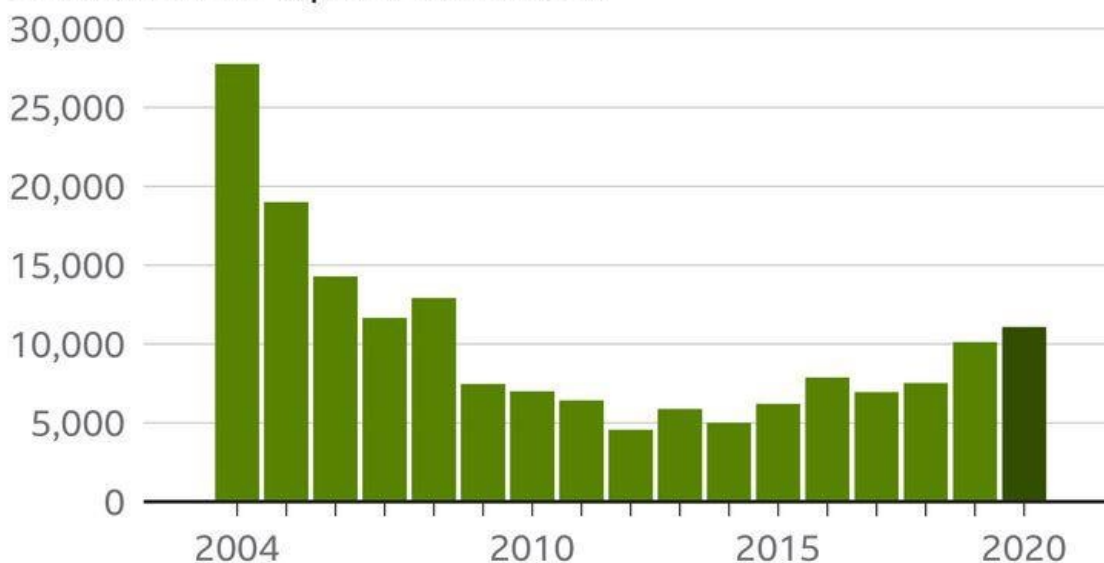
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population and an incalculable asset for the global population. The effects of deforestation on the Brazilian Amazon include loss of biodiversity, reduced water cycling (and rainfall), and contributions to global warming. To conclude, global biodiversity and sustainable development is harmed by deforestation.

## Amazon deforestation highest since 2008

Annual rate in square kilometres



Note: Annual figures August-July

Source: PRODES, Inpe



**Figure 1.** Deforestation rate in the Brazilian Amazon(Prodes, 2020).

## 2.2 Climate Change

Climate change threatens both sustainable development and biodiversity around the world.

According to Guo, Powrie and Boyd (2019: 37-44), climate change is primarily attributed to the burning of fossil fuels in recent decades, that has significantly increased the amount of carbon dioxide released into the atmosphere. Consequently, causing an increase in average global temperatures and changes in global rainfall patterns, potentially leading to more severe weather.



For instance, the pachypodium species in South Africa is either of the most significant threats to plants and animals due to climate change (Guo et al., 2019). For the pachypodium species, it is crucial to design policies and monitoring methods. The main ways to combat climate change are to keep fossil fuels in the ground, invest in renewable energy, transition to sustainable transportation, and protect Amazon rainforests. To conclude, climate change harms both the global biodiversity and sustainable development.

### **3. The relevance and usefulness of biodiversity for sustainable development in biology within South Africa.**

Biodiversity is essential for long-term development in botany in South Africa because it increases ecosystem productivity. Increased agricultural diversity, for example, results from many plant species (Shah, 2014). According to Iran et al. (2022), plants maintain ecosystem balance, protect watersheds, reduce erosion, modify the climate, and provide habitat for many animal species. Furthermore, plant biodiversity ensures a source of new food crops and medicine. South Africa is a megadiverse nation with outstanding species richness and endemism, as well as a variety of bioclimatic, oceanic, geological, and topographical settings (Biodiversity investment, 2022). It has one of the planet's highest levels of plant species abundance. In summary, sustainable development encourages us to keep from harm and enhance our resource base by progressively changing the methods we generate and use technologies.

### **4. Conclusion**

As shown above, humans play a huge role in causing threats to biodiversity and sustainable development on Earth. Deforestation harms biodiversity, which increases the atmospheric levels of carbon dioxide. This eventually leads to climate change. South Africa has many different plants from all known plant species on Earth, making it especially rich in plant biodiversity. Hence, biodiversity is relevant and valuable for sustainable development in biology within South Africa.

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"Look closely at nature. Every species is a masterpiece, exquisitely adapted to the particular environment in which it has survived. Who are we to destroy or even diminish biodiversity?" -E.O. Wilson (2017).



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